

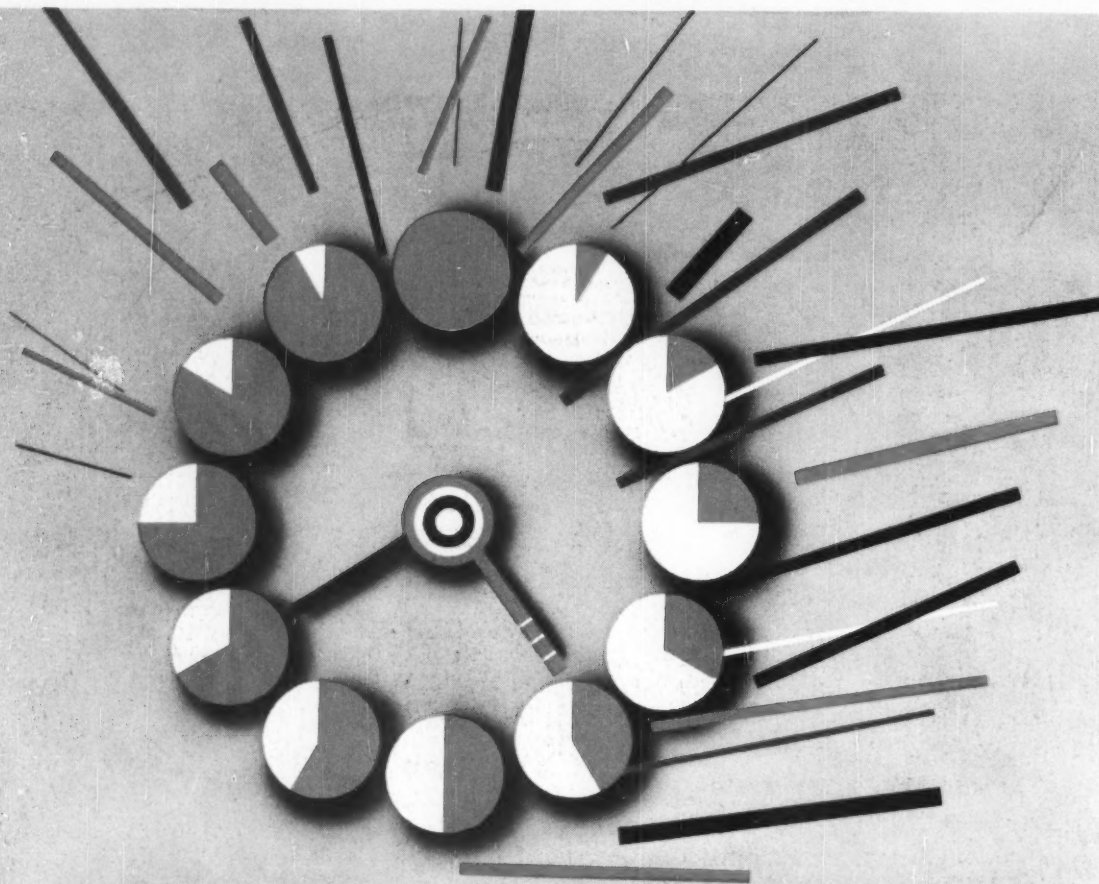
DUN'S REVIEW

and Modern Industry

A *Dun & Bradstreet* PUBLICATION

MAY 1955
75 cents

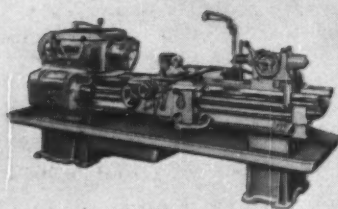
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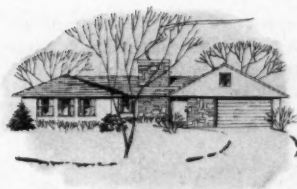
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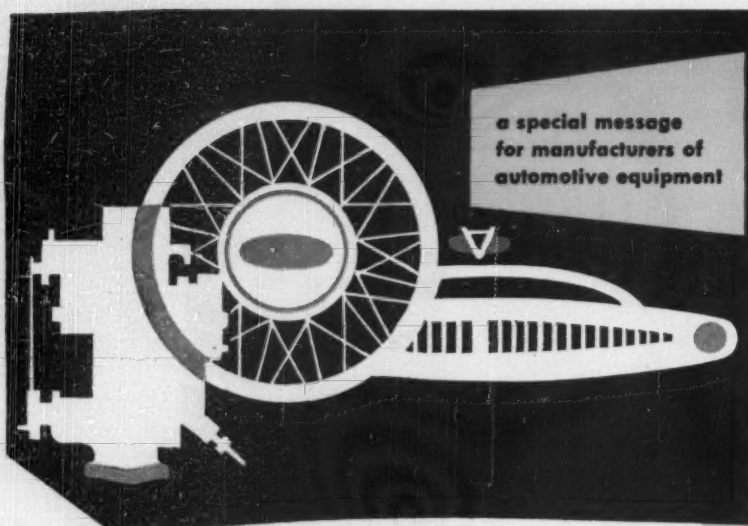
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DUN'S REVIEW and Modern Industry

READING
AND
ROUTING
MEMORANDA



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CLARENCE B. RANDALL
Chairman of the Board, Inland Steel Co.

When the modern executive steps into Government circles, he is entering a world that may be foreign—yet it is as much his world as the politician's. Here are the steps that lead to broader understanding.

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B. J. MANDEL
*Chief of the Statistics Branch
Bureau of Old-Age and Survivors Insurance
U. S. Department of Health, Education, and Welfare*

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Employer Relations Editor

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Safe operations contribute to corporate profits in two major ways: They are a prerequisite to efficient production and also a big factor in good human relations—with employees, community, consuming public. A multi-part discussion of safety from top management's viewpoint will show *why* the chief executive should play the leading rôle, and *how* he can.

Published monthly by Dun & Bradstreet Publications Corporation. Publication office: 300 W. Adams Street, Chicago. Editorial, advertising, and subscription office: 99 Church Street, New York 8, N.Y., Digby 9-3300. DUN & BRADSTREET also publishes monthly *International Markets* and *Dun's Statistical Review*. The DUN & BRADSTREET organization serves American business in the promotion and protection of trade through its varied services supplying information on business enterprises here and abroad, marketing and survey services, Municipal Service Department, and other fact-finding and reporting activities.

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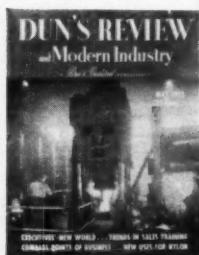
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Our Cover

The nation's economy is in a good position with steel production operating at over 90 per cent of capacity. In a Pennsylvania plant a "hot forge" press shapes steel billets for industrial use.

COLOR TRANSPARENCY BY RUDY ARNOLD

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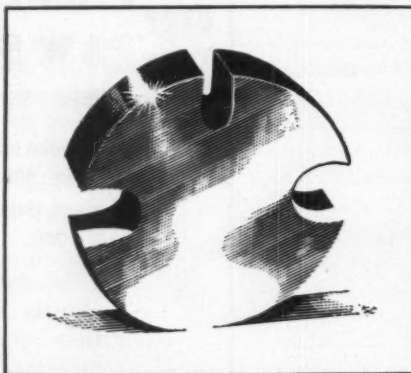
BUSINESS IN MOTION

To our Colleagues in American Business ...

It is almost always the fact that an extruded shape costs more per pound than metal in a standard form, and that it offers economies only because it materially reduces machining. Now Revere reports an unusual case in which an extruded shape actually costs 25 cents less per pound, so that it saves money in first cost as well as in finishing. Thus this shape, which is a large one, weighing 62 pounds per foot, offers compound economies.

The illustration shows the shape as supplied to a manufacturer. It is a preformed disc $1\frac{3}{16}$ " x 5", pickled and ready for finishing operations, which include drilling bolt holes and cutting cooling fins. The customer had previously tried plate and bar, and found costs excessive. At this point, we were permitted to attack the problem. Our Product Engineers, Methods and Production Departments collaborated closely with the customer, and the large and heavy extruded shape was developed. When finished, the item becomes what is called an obturator, employed to dissipate the heat generated by the light source of a powerful searchlight. Copper was selected for this application because of its high thermal conductivity and resistance to corrosion.

The manufacturer of this part reports a number of economies realized through the specification of the extrusion. One comes from the fact that the metal



is dense and uniform, due to the high pressure required by the extrusion process; thus it is machined quickly and perfectly, with almost no rejects. As a secondary result of this, the customer does not have to keep excess metal in stock to take care of spoiled parts, and the inventory of metal is less than would be required otherwise. Scrap due to machining is

much less, since details parallel to the axis of extrusion are preformed, and only the holes and slots at angles to the axis have to be produced by machine tools in the customer's plant. Also, Revere supplies the slugs in the correct thickness, eliminating a cutting-off operation for the customer. Incidentally, we are glad to supply extruded shapes either in slugs or long lengths; the choice between the two depends

upon various factors, such as the machine equipment in a customer's plant, and the production work already assigned to it.

Revere offers extruded shapes in copper and copper-base alloys, and aluminum alloys. They can save money. However, if you do not purchase such metals, please remember that your suppliers may be able to furnish you their materials, no matter what they are, in special ways or forms, to effect economies. It would be a good idea to consult them in detail and make sure to take advantage of everything they can offer you.

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HEARD IN WASHINGTON

Washington senses some uneasiness on the part of business. As reflected from all parts of the country the feeling is that business is too good. It has become more pronounced since profits for the first quarter have been tabulated. Officials are not as worried as are business executives. The legislative branch particularly would rather deal with the problems of a rising economy than with those of a decline.

Executive branches are losing no opportunity to advise moderation. They point out that it is possible to run ahead of the market. They caution that 30-year, no-down-payment housing is no favor to veterans. They believe installment selling is constructive, but warn that it can be overdone.

One official mentioned that it takes cash to buy a bag of peanuts, but no cash is needed to buy a home, or even to pay for the closing fee. Nevertheless, they feel that it is better for market forces to take care of excesses rather than attempt to manage the whole economy from Washington.

★ ★ ★ Complaint because the farm problem practically was omitted from the President's last economic report is thought to be the reason for selecting Joseph S. Davis as a member of the Council of Economic Advisers. Choice of an objective and courageous economist who will follow no one's lead for expediency's sake is regarded as essential in the present situation when the President must be realistically briefed in order to resist the pressures being brought to bear on his agricultural program.

It is of importance to business to have the right kind of men on the Council so that its problems will be considered from an economic rather than a political standpoint.

While Davis has had long experience as a college professor and has

been president of the American Economic Association and the American Statistical Association, he is not academic. This has been proven by his work with the Randall Commission, the Dawes Commission, and other organizations.

The third member of the Council, Ray J. Saulnier, was drawn from its staff where he has become thoroughly familiar with the work. He carries no political torch, is described as the yes-man's antithesis.

★ ★ ★ More world trade and less foreign aid. This is what the Administration wants. The President beat Congress to the punch by taking the initial steps to wind up the Foreign Operations Administration as a separate activity. He put Harold Stassen on a better horse and, at the same time, won acclaim by assigning disarmament to a top flight aide.

The new assignment given Harold Stassen is expected to emphasize to the world that the United States attaches great importance to disarmament. It is also in line with the President's idea that such matters should head up in one man. Harold E. Stassen's personal appraisal of the communistic leadership gives assurance that he will not be swayed by any plan that would allow any nation to evade full compliance with the restrictions.

★ ★ ★ Raising of the bank merger issue in Congress has served to emphasize that big banks are necessary if big business is to be financed. Restrictions on the percentage of capital that may be loaned to any one borrower keeps the smaller banks from rendering the services some companies require. Many legislators believe banks have a right to acquire resources that will enable them to compete with insurance companies for large loans.

Another point brought out is that

decentralizing in cities has made more branches necessary to serve customers. Restrictions on branch banking preclude the building of a nation-wide institution. It is quite evident that a majority in Congress fails to see any danger in monopoly in banking.

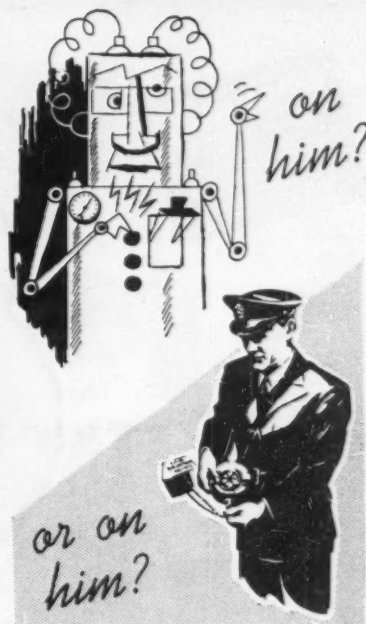
Much more praise than censure has been aroused by the report of the Attorney-General's national committee which espouses tough rather than soft competition. Henry Clay once said, "of all human powers operating on the affairs of mankind, none is greater than competition." This has been the motto followed by the anti-trust division of the Department of Justice. Since Stanley N. Barnes, present head of the division, supports the report "enthusiastically" (with minor dissents), more rigorous enforcement of present laws is in prospect as is a recommendation strengthening existing laws.

The report probably sounds the knell for the fair trade laws, but an attempt to repeal them would precipitate a legislative battle. They may die from default since neither manufacturers nor public officials are doing much to make them effective. (More on page 83.)

Surprise was occasioned in Congress when the Fulbright hearings brought out that credit extended for stock market purchases is a negligible percentage of outstanding debt—2.5 per cent of the mortgage debt; 1 per cent of the total increase in debt since the war; 8 per cent of the consumer debt. The consensus is that the hearings served a purpose in clarifying the current stock market situation. The thought is expressed that the soundness of conditions which was revealed may prompt more speculation.

★ ★ ★ Misfortune seems to follow the choice of issues made thus

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far by Democratic party leaders. In the by-election campaign last year valuable time was lost trying to show that Administration policies were responsible for a recession in business. That plan had to be abandoned when economic improvement became generally apparent. An attempt then was made to show that tax legislation discriminated against the lower income brackets.

The charge did not bear analysis. 40 per cent of the tax reduction went to those with incomes of less than \$5,000 who bear 29 per cent of the tax burden. Those paying 71 per cent of income taxes received 60 per cent of the cut. Defeat of the proposal for a \$20 tax cut across the board was a decisive victory for the Administration and for the continuance of a stable economy.

A battle for continued stability was won when Congress voted down proposed tax reductions. The debate on the tax bill indicated that the corporation tax is unlikely to be reduced in the foreseeable future. A disposition was shown to shift excise sales taxes to other commodities but it was admitted that such levies have become a permanent part of the tax structure.

Need no longer exists for taxes to prevent use. Future excise taxes will be on commodities that will produce the most revenue. It is apparent that Congress recognizes that Government outlays cannot be reduced much further. Costs of Government are not declining in any sector. They are certain to increase. Demands for increased payments to the aged are irresistible. Roads, schools, hospitals, will receive more Federal aid. Most states these days are spending more than they take in.

Business momentum is not the only reason for an increase in tax receipts over estimates which were regarded as very optimistic when made. The timing of corporation tax payments has had some bearing. Extension of the deadline date for individual income tax payments has made it possible to process corporate returns more promptly. The improved outlook for receipts has

aroused hope for a balanced budget in the next fiscal year.

Labor is more alert than management to the revolutionary possibilities of automation, some technical specialists in Washington believe. The wonders of electrical development have been pushed into the background by the marvels of electronics.

★★★ It is difficult for an elected official to take a stand against payment wages on an annual basis. Despite the agitation of that issue almost nothing has been said against it on the floor of Congress. It is apparent that the question is, "How is employment security coming?" not "Is it coming?" Demands of labor are certain to become more insistent. Heads of local unions are not re-elected by acting like statesmen.

History has demonstrated that power without responsibility cannot last, but the curbing of labor leaders by political action will be very slow. No change in the Taft-Hartley law in that direction is likely. Amendment is likely to require employers to sign an anti-communist oath and to require more supervision of welfare funds. That is about all that is expected. Right-to-work laws, however, are being enacted by more states.

Highly organized teamsters occupy a strategic position. Practically every commodity moves on rubber one or more times in its course from producer to consumer. If all drivers of trucks and other motor vehicles could be called out the whole economy could be brought to a standstill.

Liabilities that go with adding a person to the payroll are being recognized as a problem of major importance. Deductions must be made for social security, pensions, and hospitalization. Contracts with some unions provide for check-off of dues and severance pay. Older persons frequently are not hired because of union requirements against salary reductions if they are assigned to less arduous duties. Thus impetus is given automation and sub-contracting.

Paul Weston

WASHINGTON, D. C.

A positive new way to cut material handling cost

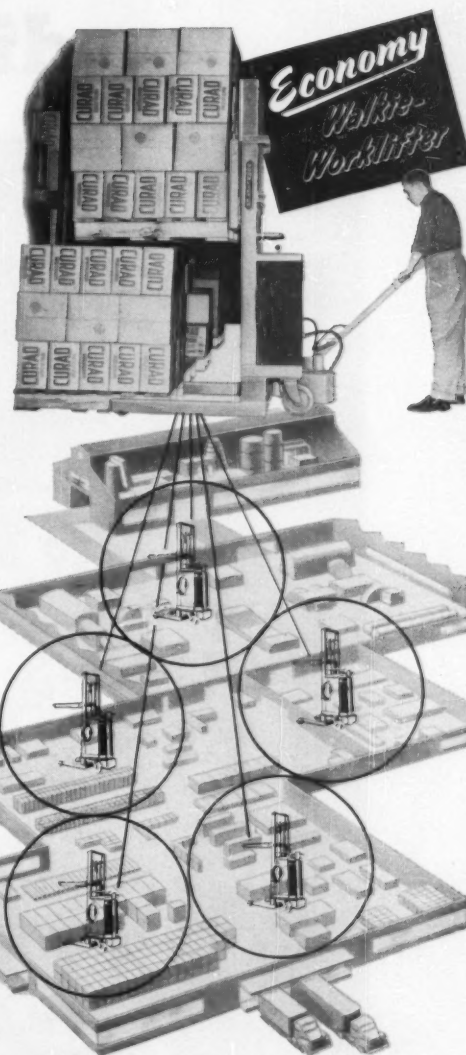
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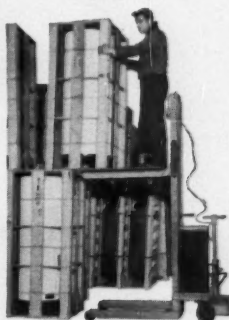
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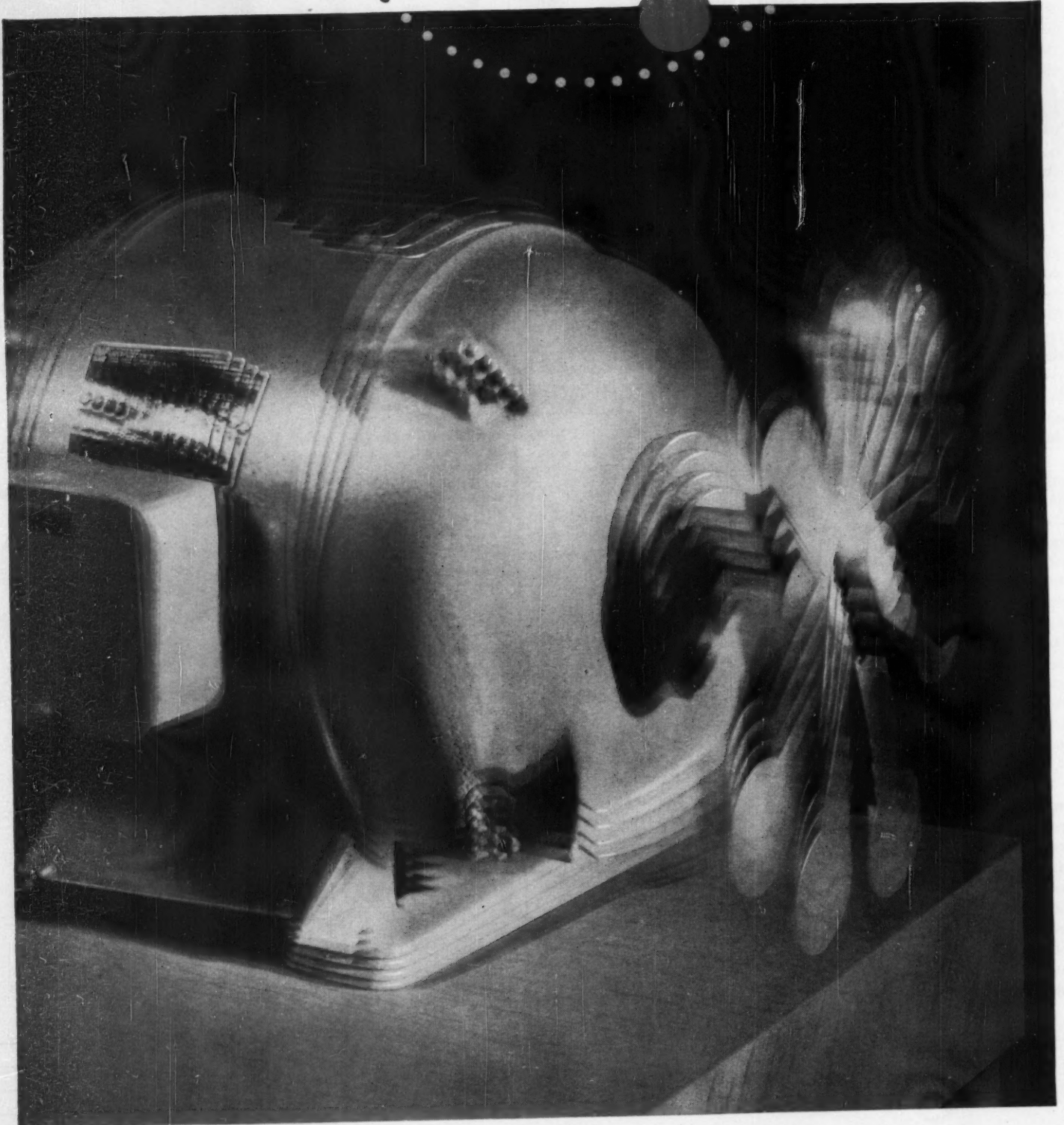
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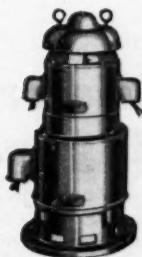
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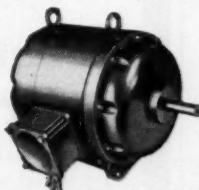
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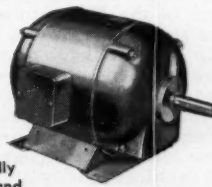
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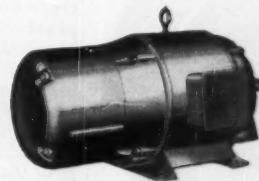
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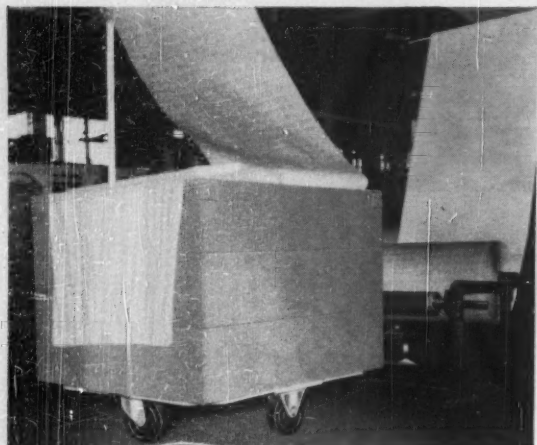
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The 2700 Series is the Rigid Companion to the 200 Series. Designed and built for solid rigidity. Deeply embossed and drawn from heavy gauge steel. It is solidly formed to withstand strain and wear.



Each month the solution to a real materials handling problem is fully presented in a free, handy size folder. To get the complete story on the Cranston Print Works caster application mentioned above, write for your copy, no obligation.

FAULTLESS CASTER CORPORATION
EVANSVILLE 7, IND.

Offices in: Atlanta, Boston, Buffalo, Chicago, Cleveland, Dallas, Detroit, Grand Rapids, New York, Philadelphia, St. Louis, St. Paul, Springfield, St. Petersburg, Tampa, Washington, D.C., and many other cities.

**FAULTLESS
SOLVES
THE TOUGH
JOBS**

VOICE OF INDUSTRY

*More wealth lies
below the ground*



*"... more minerals
... lie below the
earth's surface ..."*

WILLIAM S. PALEY

Chairman of the Board, Columbia Broadcasting System, Inc., before National Planning Association, Washington.

To squander resources is certainly evil, but to hoard them is certainly stupid. Resources are for use—at the time and place where demand is. Moreover, high consumption goes hand-in-hand with prosperity, and low consumption is only another name for depression. We do not want to leave our timber uncut

and our ores unmined when the only effect of this is industrial undernourishment and economic stagnation, and when it means unemployment in mills and factories and not enough wages to buy food for the family at home. High, steady, but *unwasteful* consumption would seem to be the sign of a truly abundant and efficient economy—if this consumption is thoughtfully drawn from resources known to be adequate for a foreseeable future. Many things are out of balance in this equation today. Fortunately, many ways exist to improve the balance.

To my mind, the way to do this is *not* to hammer down consumption or hoard resources. Nor is it to let soaring high prices for materials throttle the whole economy. Rather it is to intensify the search for new materials, or new ways of getting old ones. Domestically, this

Continued on page 16

Starts everybody working earlier!

Mail must be *opened* before the office day can get under way... and a PB MailOpener is a sure, safe means of saving those valuable early morning minutes. Far faster than "hand and dagger" methods! Ask your nearest Pitney-Bowes office to demonstrate. Or write for free illustrated booklet and postal rate chart.

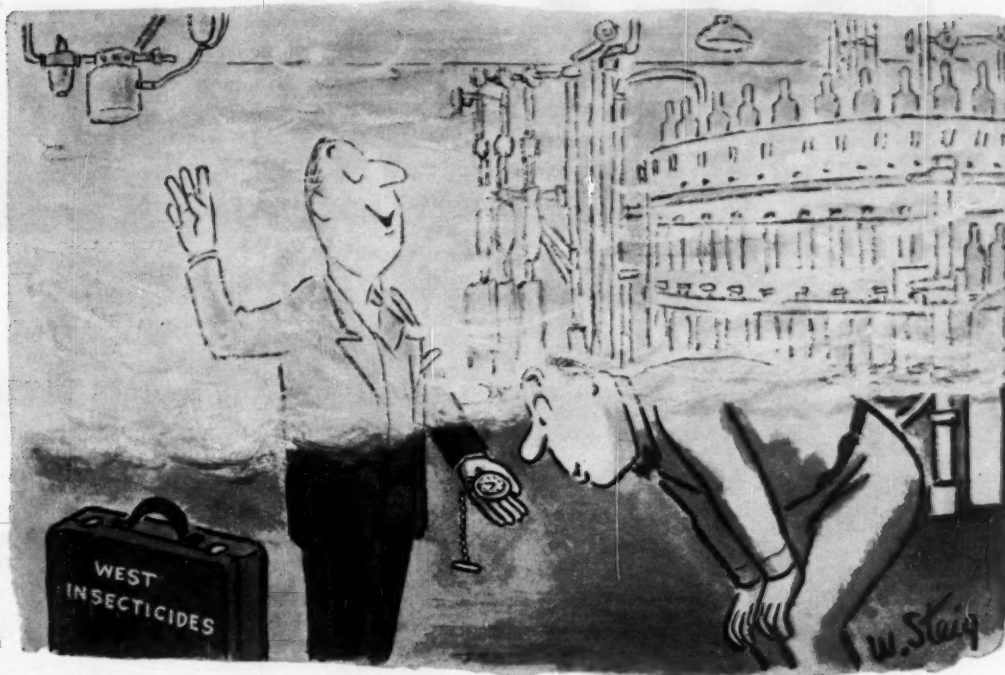
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Electric model LE safely, easily trims a hairline edge off any kind or size of envelope... opens a whole morning's mail in a jiffy. Other models, hand or electric.

FREE: Handy desk or wall chart of postal rates, with parcel post map and zone finder.



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THAT's how quickly you can control insects in 10,000 cubic feet of space with WEST ATOMIZERS and VAPOSECTOR insecticide.

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In Canada: 5621-23 Casgrain Ave., Montreal

Dept. 1

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☐ I'd like to have a WEST insect control specialist telephone me for an appointment.

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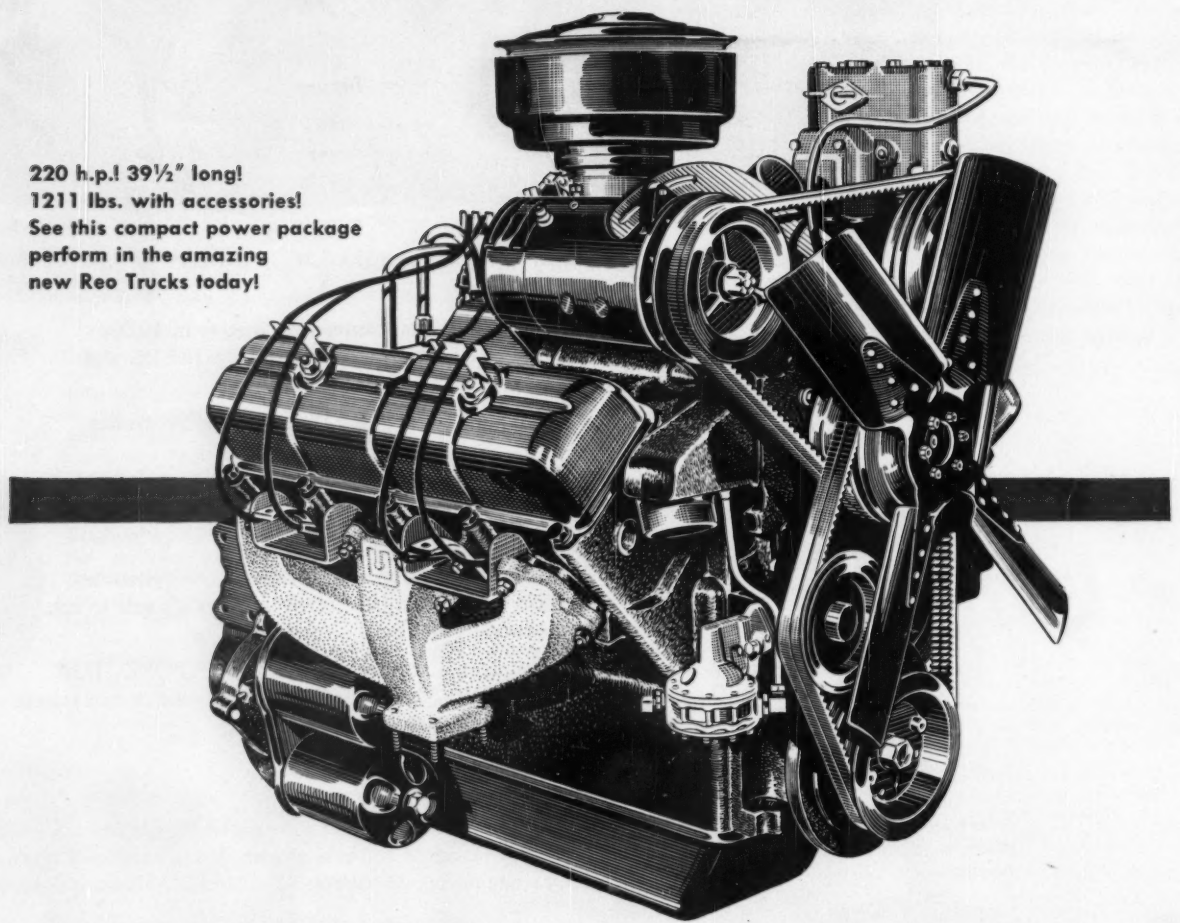
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Warranty covers engine models—255 OA, 292 OA, 331 OA, OH 160, OV 195, OV 220, OH 160 LPG, 255 OA LPG, 331 OA LPG. Available through Reo Factory Branches, Distributors and Dealers nationwide. Buy Reo . . . replace with Reo . . . and be *doubly* sure of performance.

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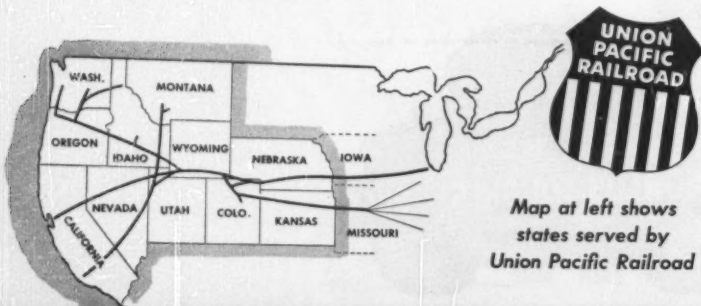
The nature of an industrial project determines its requirements but "movement" is always a big factor.

There's the *movement* of materials and equipment necessary for plant operation . . . the *movement* of unfinished products and of finished goods to markets . . . even the *movement* of executives on business and vacation trips.

So, in many ways, *movement* translated in terms of rail transportation, is very important when selecting an industrial site.

That's one reason why so many concerns have established plants in the "Union Pacific West" where the finest of rail service is conveniently available.

For complete and confidential information about available sites, see your nearest U.P. representative or contact Mr. W. H. Hulsizer, General Manager of Properties, Dept. 371, Union Pacific Railroad, Omaha 2, Nebraska.



Map at left shows
states served by
Union Pacific Railroad

UNION PACIFIC RAILROAD

lies in improving incentives to exploration and development of what we know, or suspect, we have.

Most geologists agree that more minerals probably lie below the earth's surface than we have ever yet been able to explore, much less develop. But not enough work, or even imagination, has yet been put forth to start a New Era of man's exploration of his planet—this time not in voyages across the land and water, but downward, through the Basement Rocks of the Globe. And the place for this new era to begin is certainly right here at home.

More sales from
strategic selling



DAVID T. MARVEL

Vice-President (Sales), Olin Mathieson Chemical Corp., before group of West Coast hardware executives.

"... the greater the illness, the greater the need ..."

It seems to me that in this day we're becoming, perhaps, too absorbed with the tactics of selling at the expense of strategy in selling. I don't want to imply that I think the strategy of selling is dead. But I believe all of us would agree that it is suffering from acute lack of attention. In too many industries today, sales strategy takes a back seat to sales tactics. The symptoms are easy to recognize. They involve too much emphasis on quick cure-alls, catch phrases, slick slogans.

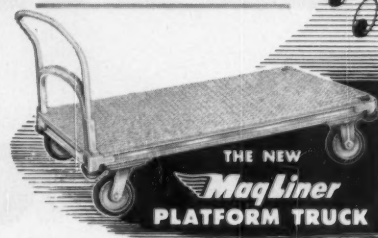
For all of us in the business of selling, the beginning should be the development of our sales strategy. The King of Hearts' advice in "Alice in Wonderland" is good advice for a salesman: "Begin at the beginning and read through to the end."

Who ever saw a sick business or industry cured by a change in day-to-day tactics? The more problems a business or industry faces, or the greater the illness, the greater the need for new strategy.

Strategy in its broadest sense involves three steps:

- 1) Prepare the market for your product.
- 2) Prepare the product for your market.

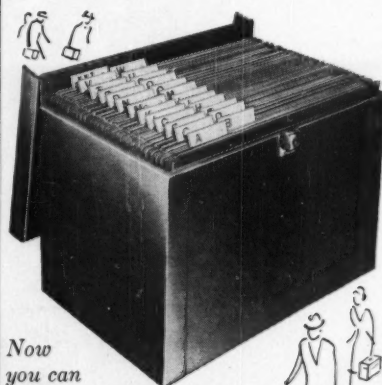
MEET the Newest thing in MAGNESIUM!



THE TRUCK THAT HAS EVERYTHING
... (Except Dead Weight!)

It's the load that pays the freight . . . nothing else! Don't penalize your floor truck operations with the needless burden of excess weight. Now, in answer to popular demand, Magline—America's oldest and largest exclusive manufacturer of magnesium dock boards, hand trucks, and materials handling equipment—introduces this new, magnesium-light, magnesium-strong, 4-wheel platform truck. Capacity rated to handle loads up to 1/2 ton, it weighs in at a mere 49 pounds . . . lighter than similar equipment by as much as 75%! Thirty standard models to choose from. Before you buy platform trucks for any purpose—write for Information Bulletin No. 151.

Magline Inc. P.O. Box 15 Pinconning, Mich.

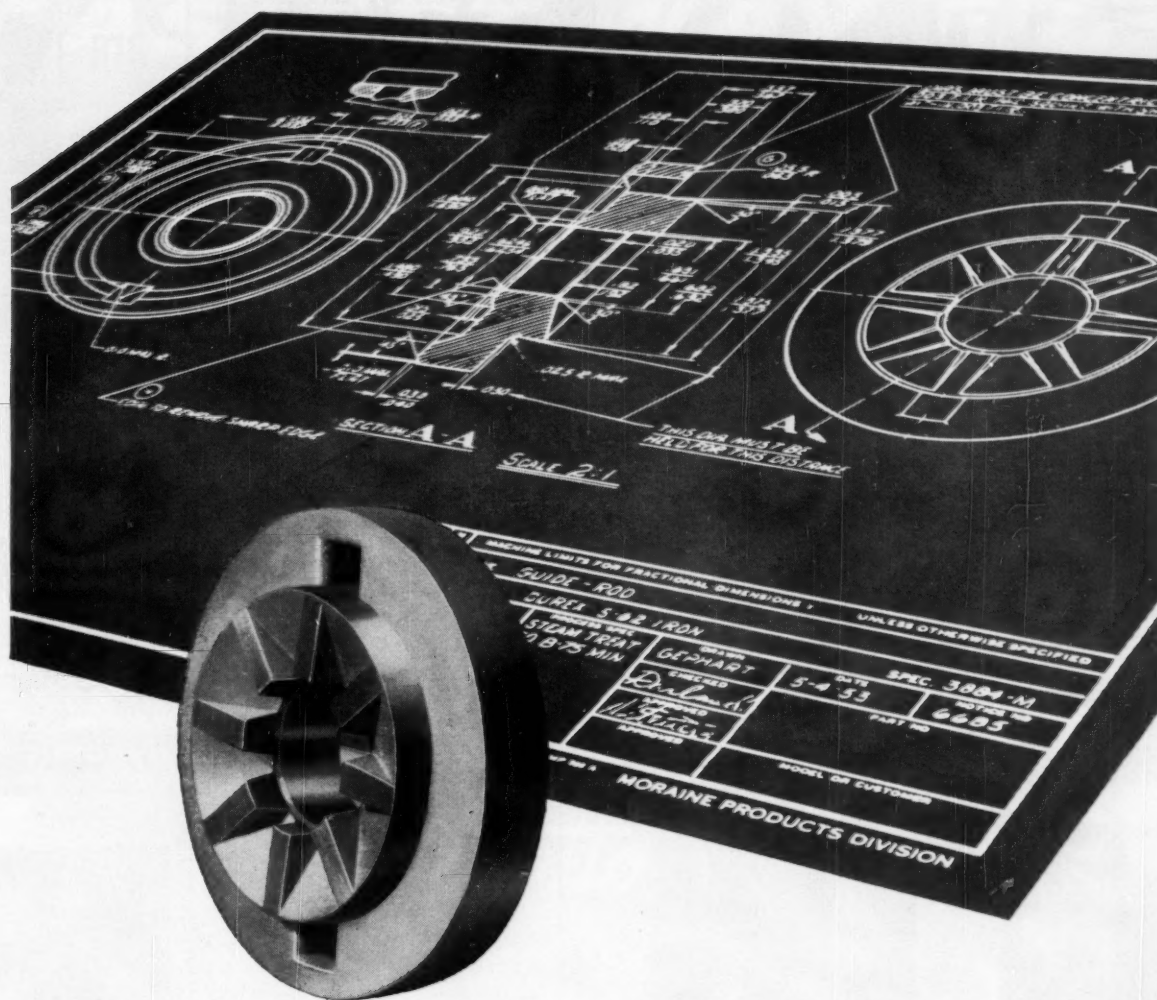


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Oxford Filing Supply Co., Inc.
31 Clinton Road Garden City, N.Y.



MORaine MAKES MANY COMPLEX PARTS FROM METAL POWDER

When you examine the background print you note the intricate design and close tolerances demanded of this metal powder part. Imagine the expense entailed in producing this part by conventional casting and machining methods!

Through the use of Moraine metal powder technique, this part is produced to precision standards with *one* press operation. The sav-

ings in cost make a most important contribution to the over-all profit possibilities of products using similar parts.

This is but one more example of what is being accomplished through cooperative effort between customer and Moraine. Industries everywhere are improving performance and cutting costs by sharing Moraine's experience with metal powder.



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products**
DIVISION OF GENERAL MOTORS, DAYTON, OHIO

**METAL
POWDER
PARTS**



This is the introduction of another Tornado vacuum cleaner developed to meet the needs of "Modern Maintenance."

The new Tornado Model 240 Noiseless is the perfect answer for cleaning conditions where noise is a factor, and yet powerful suction is necessary for speed and thorough cleaning.

What's more—it does both wet or dry pickup with equal efficiency.

The powerful 1 H.P. multiple stage motor has a separate cooling system completely isolated from the suction or cleaning air.

For all industrial or institutional use, Tornado Noiseless is your answer for faster, efficient, noise-free cleaning.

We'll be glad to give you an "On-the-spot" demonstration. Be sure to write for Tornado Bulletin 707 today.



250 M.P.H. suction speeds pick up all dirt, dust, even metal chips, faster and easier.



Tornado Noiseless picks up all oil, liquids or scrubbing solutions—leaves floors "bone dry."

TORNADO. the complete maintenance line



BREUER ELECTRIC MFG. CO.

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3) Develop in your market a feeling of trust and confidence which tactics can later turn into sales.

No one wants to belittle the importance of sales tactics. But when tactics become the end instead of the means, strategy is left ignored in the corner.

A challenge to top management



"... they must become tough-minded realists..."

EDWARD MCSWEENEY

Vice-President, Treasurer, Perkins-Goodwin Co., before Associated Industries of Massachusetts, Amherst, Mass.

Management in its purest form is leadership.

In recent years there have been many attempts to define the most important qualities of leadership, but that is such a serious and involved subject that it will be some time before we can look at a check list and measure our individual ability to qualify.

All over the world attempts are being made to spot those qualities in our younger men to qualify them for intensive grooming for future management leadership. . . .

Regardless of definitions, . . . management must assert leadership, and become more vocal, more articulate, and militantly aggressive. Management has to be "for" something. There's an opportunity waiting for you—a chance to take part in a great offensive designed to protect the enterprise system which today is on trial throughout the world. If you believe in the enterprise system, tell the story of business to employees, stockholders, students, clergymen, and the mythical man in the street. Intensify your participation in national affairs at the community, the state, and the federal level. Try to budget a few hours every year to sit down with your legislative representatives and explain some of the problems of business.

If business management doesn't accept this challenge and become tough-minded realists, I shudder to think about what the politicians

are M.P.s working for you?

We're not referring to Military Police, we mean well planned MOTION PICTURES . . . and the work it can do FOR YOUR BUSINESS.

1. IT CAN TRAIN YOUR EMPLOYEES
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A good motion picture may be the MOST ECONOMICAL WAY FOR YOU TO SOLVE YOUR SPECIFIC PROBLEM . . . whether it be personnel, production, sales, or institutional.

Dynamic Films can supply you with this most powerful modern production and promotional tool . . . AND MAKE IT WORK FOR YOU!

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FROM thirty-six models, choose the one best suiting your needs. And select the right staple—whether single-leg, double-leg, narrow-crown, etc. Adaptable—useful—Hansen is a much-needed and helpful tool.



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Now an entirely new concept in office photocopying. Turn the dial . . . get the clearest, fastest, most convenient copy of anything. It's the new all electric Apeco Dial-A-Matic Auto-Stat with revolutionary finger tip dial control . . . the results of years of Apeco experience and continuous research. The original can be any color on opaque or transparent paper - printed on one or both sides. It copies any original up to 15" wide, any length. The Dial-A-Matic is years ahead in design, too . . . light weight for easy portability . . . compact to fit on the corner of any desk and is outstandingly styled in an eye-catching contrast of polished and satin finish stainless steel. It offers hundreds of money and time saving uses in every business at a price well within the budget of even the smallest firm.



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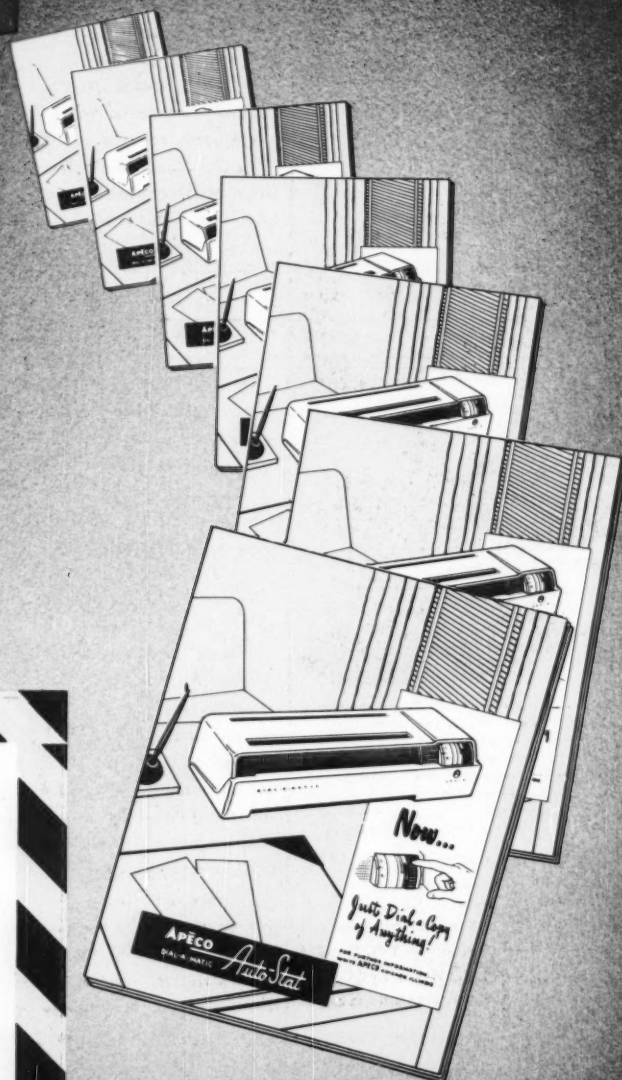
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and labor leaders will do to our future, which is the one thing that we all must fight for. If business management is going to understand politicians and work with them, they must become tough-minded realists, because labor leaders are tough-minded realists and politicians are tough-minded realists.

Investment prospects in Latin America



"... many signs of an improving investment climate..."

J. PETER GRACE

President, W. R. Grace & Company, before Investment Bankers Association of America, Chicago, Ill.

I believe that any prospective investor in Latin America should carefully analyze conditions in the country or countries in which he proposes to invest.

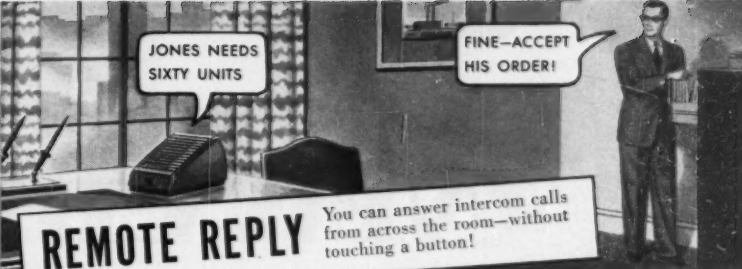
In the second place, he should become associated with expert managers with experience in that field.

In the third place, he should consider his investment as a permanent one, which he would build up with plowed back profits and to which he would apply long-range management and development policies, just as he would in the case of a domestic enterprise.

Bearing these precepts in mind, I don't think he has much to fear. There are countries in Latin America which have no exchange controls and which are operating under a full and free economy. There will be periods, as there are now and as there have been in the past, when earnings and reserves in some countries cannot be remitted.

There is no reason to consider that such conditions are permanent, or even more than transitory, and the return on investment can and should more than offset the transitory inability to remit earnings. In the meantime the accumulated currency earnings can be plowed back into the business. . . .

Today in Latin America there are many signs of an improving investment climate. Our Government is taking an increasing interest in the economic well-being of this area—and for good practical reasons.



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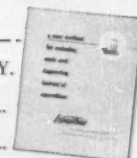
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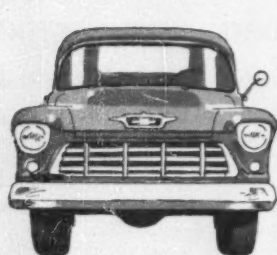




New models—more models—all loaded with new advantages!

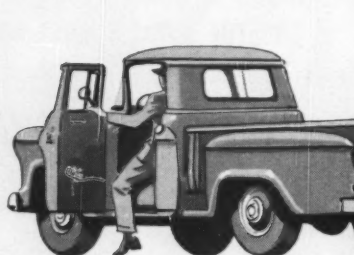
NEW CHEVROLET *Task-Force* TRUCKS

Choose the model that's matched to your job. You'll get the most modern engineering features in the industry—and cut costs hauling or delivering! Your Chevrolet dealer is ready to supply full details of these important new Task-Force features. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.



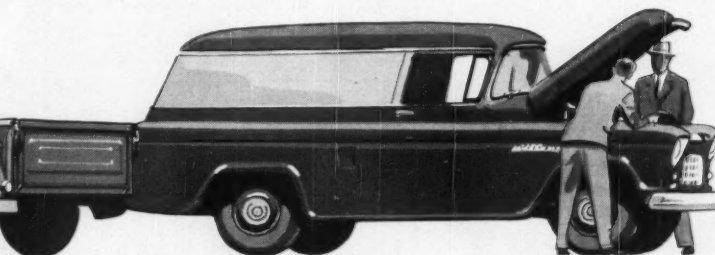
New Cab Comfort and Safety!

Featuring a Sweep-Sight windshield and more glass area all around; new High-Level ventilation for cleaner, fresher air; new broader, softer seats . . . and concealed Safety Step running board.



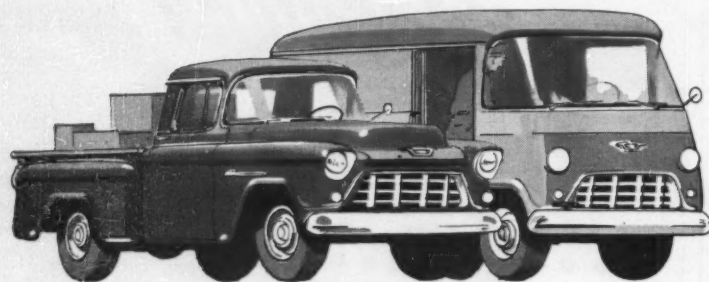
New Frames—New Ride!

All New Task-Force models have new, more durable 34-inch ladder type frames with full-length parallel side members. New suspension, front and rear, provides a smoother, more stable ride for both the driver and the load.



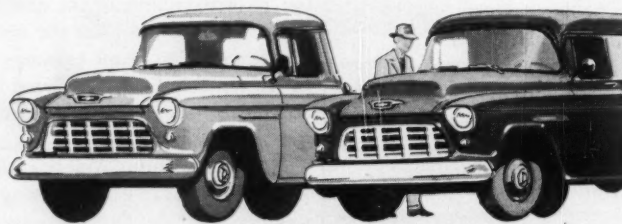
New "High-Voltage" Engines!

New Task-Force trucks now bring you the biggest engine choice in Chevrolet truck history. All six new high-compression valve-in-head engines feature a new 12-volt electrical system!



New Power Brakes!

You get the extra driving ease and safety of Chevrolet Power Brakes as standard equipment on 2-ton models—optional at extra cost on others. Tubeless tires are standard on all 1/2-ton models.



New Power Steering!

It cuts turning effort up to 80% . . . and helps keep you "on course" in spite of severe road shocks—or even a blowout. Driving's easier, safer and less tiring with this Task-Force power helper. Available on all models at extra cost.

New Overdrive—Hydra-Matic!

Big gas savings with the extra-cost option of Overdrive! Now available on 1/2-ton models. Hydra-Matic—optional at extra cost on 1/2-, 3/4- and 1-ton models—cuts driving fatigue.

The Trend of BUSINESS

A N D *Compass Points*
Q U A R T E R L Y

- *Consumer Demand at Record Level*
- *Can Home Building Keep Booming?*
- *New Car Every Three Seconds*
- *Total Output at Peak Level*
- *Outlook for the Months Ahead*

OVERWHELMINGLY confident that volume in their own businesses in the third quarter of 1955 would be above a year ago, the executives interviewed in the latest DUN & BRADSTREET survey of business men's expectations were considerably more optimistic than they were last year. According to preliminary data from the survey, 73 per cent of the executives expected an increase in their third quarter net sales, 60 per cent an increase in their net profits. By far the majority thought their selling prices and inventories would either be the same as in the third quarter of 1954, or increase. Declines in selling prices were expected by but 6 per cent of the executives, reductions in inventories by 12 per cent.

It was thought that employment would remain high and steady, with 81 per cent of the executives expecting to employ as many people as a year ago and 15 per cent expecting an increase. Past comparisons are on pages 26 and 27.

To 1960

How good business will be five years from now is outlined in a 1,148 page tome, recently published by the Twentieth Century Fund, called "America's Needs and Resources." This 1955 study is not to be confused with an earlier

project with the same name, undertaken by the same man, J. Frederick Dewhurst, in 1947. The present version, a revised and enlarged edition of the earlier one, took Dr. Dewhurst and 25 specialists five years to compile.

If the experts are correct, the 1960 gross national product will range between \$350 billion and \$490 billion, probably hitting something like \$414 billion. "Under wartime emergency conditions," they say, "it could rise to \$600 billion." This is presumably not atomic war conditions. These figures are in terms of 1954 prices in order to measure the physical volume of output, discounting the effects of possible inflation, or deflation in prices. The gross national product for 1954 amounted to \$357 billion; present and past comparisons are reflected in Compass Point 20, on page 27.

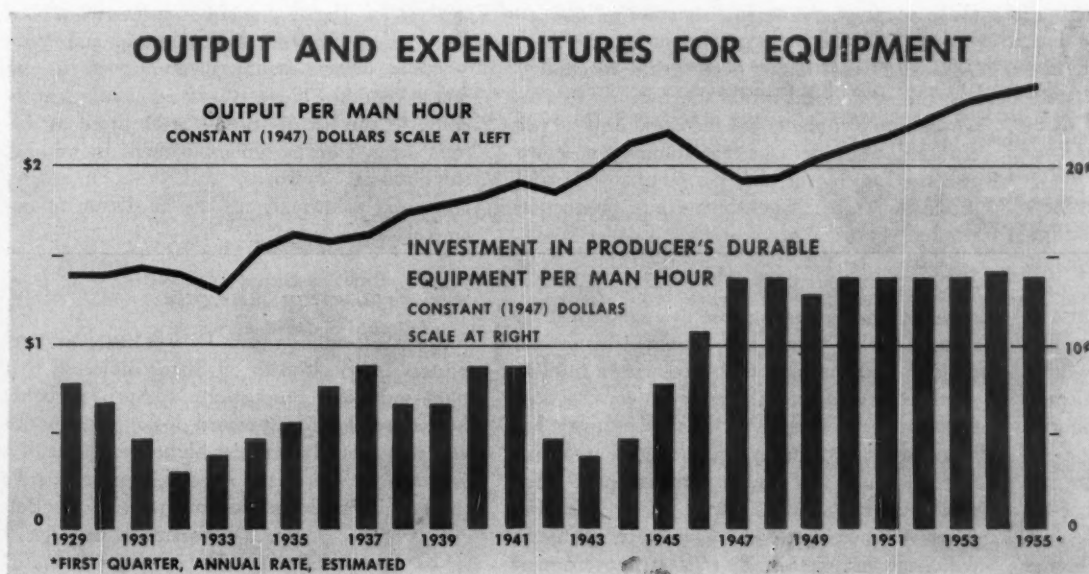
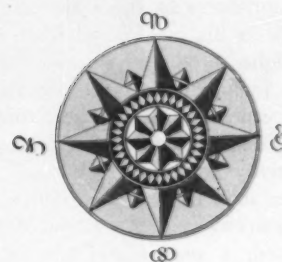
Should the 1960 figure reach only the lower limit of the projections, the \$350 billion level of gross national product, we shall be less well off than to-day; should it reach the upper limit, \$490 billion, we shall be noticeably better off. Should the middle figure, \$414 billion, be reached, we'll have slightly more goods and services for each person than we have now, and will work noticeably less hard to achieve them.

The projections are based on the usual foundation: estimates of population, the potential number of employed, average hours of work, and productivity. Based on past proportions, the experts feel that there will be about 69 million employed in 1960 (this includes government workers and members of the armed forces, who are expected to total 10.5 million); unemployment will be about 5 per cent of the labor force,

or 3.5 million; the average work week will be at roughly 37.5 hours; and productivity will increase at the rate of 2.3 per cent a year, or 25 per cent for the decade 1950-1960. It increased about 47 per cent in the 1940-1950 decade. If the gross national product is at \$414 billion, the 1960 economy will turn out about 16 per cent more goods and services than in 1954 and 28 per cent more than at the peak in World War II. Per capita disposable income in 1960 is to reach a level 3 per cent above that in 1954.

While the book is a very sizable and enlightening research project, the breadth and fine points of which are apparent, comparing the projections with those from some other sources, it appears that the authors may have been unduly conservative. Perhaps this is because the manuscript went to the printer in the Fall of 1954, when revival from the late recession was earmarked clearly only in the DUN & BRADSTREET surveys of business men's expectations and decisive confirming statistics were not yet available.

There is also the usual objection to hinging forecasts of economic health on forecasts of population growth, which of all kinds of forecasts have proved wrong most often. And the insistence on a given level of employment to achieve



Productivity continued to edge upward in the first quarter of 1955; although the investment in producer's durable goods in total remained as large as a year ago, higher employment and a longer work-week resulted in a slight dip in investment per manhour. The "output per man-hour" curve was derived by dividing the Commerce Department's gross national product estimates in constant (1947) dollars by the number of manhours worked; the latter was computed by combining the Bureau of Labor Statistics' estimates of the average work-week with the Census employment estimates. The "investment in producer's durable equipment" data are from the Department of Commerce. The figures in the chart are rough approximations, derived from the best available data.

a given level of output disregards what might be sharp variations in worker productivity. The fact is that today's 60 million employed could produce twice as much as they do, given the required machinery, knowledge and power. It is the survey's own point that to-day's average worker produces six times as much in an hour of work as his great-grandfather did in 1850. This higher productivity is attributed to technology. Inanimate energy accounted for almost 99 per cent of 1950's output, compared with roughly one-third of 1850's. If present rates of productivity continue, a hundred years from now we shall be able to produce as much in seven hours as we produce now in 40 hours.

Granted, a population increase devolves on nature, a somewhat more dependable variable in the general scheme of things than mankind's willingness to grab the bootstrap and exert upward pressure. But in the atomic age, it seems rather fainthearted to leave so much to emotion, rather than intelligence.

It is also true that large population is no guarantee of good business, no matter how great the need for goods and services, if purchasing power, generated through productive investment, does not exist. There are ten Chinese for every American, yet telephones in China are less than 1 per cent as numerous as in the United States.

Past achievements in productivity and investment in productive equipment are reflected in the chart on page 23. The projected changes in consumers' purchases of various kinds of goods and services in 1960 are charted on this page.

Look, No Hands

Automation has been aptly characterized as a new name for an old development. As far back as 1784—before Washington first took office—the first continuous process flour mill had been developed. Seventeen years later, M. Jacquard demonstrated his automatic loom which was controlled by punch cards.

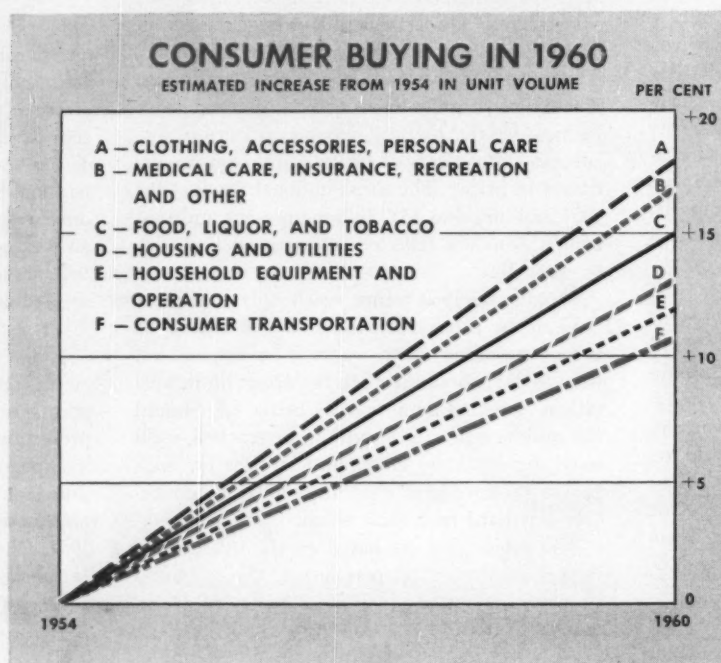
In recent years the application of many new electronic devices to control production machinery has added new drama to a trend which has been stirring and growing for decades. Automation has become an increasingly important factor in labor negotiations. Walter Reuther lists automation as responsible for the union's drive for the guaranteed annual wage. He has already announced that the next goal will be a shorter work-week.

In some industries where automation has made the most headway, employment has increased rather than declined in recent years. Upgrading of jobs (which results in higher

wages and purchasing power) has been the result, rather than displacement of workers. As wages rise and prices fall from increased productivity, purchasing power can be channelized into many other areas such as better schools, roads, medical care, travel, and recreation, thus creating many more employment opportunities.

Cost Reduction

While some expansion in jobs can be expected in plants producing automation machinery and devices, it cannot be expected to equal the decline in the number of production workers, or else the savings in labor costs would be illusory.



Much of the increase over 1954 is attributable to population growth. If we have the expected 177 million people in 1960, per capita consumption will compare this way with 1954: a +8, b +7, c +6, d +3, e +3, f +2. Disposable income per household is expected to average \$5,600 in 1960, 5 per cent above that in 1954. Data are from the study, "America's Needs and Resources."

Since 1947, the output of electrical machinery has almost doubled while the number of employees in such plants has increased only 20 per cent, indicating perhaps that automation begins at home. During the same period total industrial production rose 32 per cent while production workers dipped 2 per cent.

During the past two years there have been some remarkable shifts in the occupational patterns of the American people. Employees in manufacturing plants have declined about one million, with most of the shrinkage in durable goods plants. Despite the boom in construction, the number of employees in that industry has been unchanged during this period. Payrolls in transportation and public utilities have been shortened by about 220,000. Partly offsetting these declines, however, have been gains in wholesale and retail trade (60,000), government

(180,000), finance, insurance, and real estate (120,000), service, and miscellaneous (75,000).

Hiring Plans Higher

Factory employment continued to edge upward slightly last month from the level of 16.3 million in March, according to preliminary information from many sections. While this has been the highest level in thirteen months, it was still down about a million from the near-record level reached two years ago. Despite the drop in factory employment from March 1953, total manufacturing output was close to the record level in March 1955. Manufacturers' preliminary hiring plans indicate that factory payrolls will probably increase through the remainder of the second quarter of this year.

Unemployment Down

Early indications from many parts of the nation pointed to a slight decline in unemployment in April from the level of 3.2 million in the prior month. This was well below the post-war high of 4.7 million reached in February 1950. April would be the third consecutive month in which joblessness remained less than that of a year earlier.

That this tolerable level can be maintained during the months to come when hundreds of thousands of new workers enter the job market seems likely considering the present momentum in the economy.

Of the nation's 149 major labor markets, eighteen had a balanced labor supply in March, compared with fifteen two months before. While those with moderate labor surpluses declined from 90 to 88, the distress areas—primarily in New England, Pennsylvania, and West

Virginia—were about as numerous as in recent months. There was a noticeable lengthening in the list of smaller areas listed as distress areas. Chronic unemployment in mining, shipbuilding, railroads, and other industries accounted principally for the hard core of unemployment.

The Production Advance

Early information from DUN & BRADSTREET reporters in 66 cities in 39 States indicated that total industrial production in April probably held close to the near-record of the prior month and was about 10 per cent higher than that of a year ago. In March the Federal Reserve Board's index of industrial production (physical, not dol-

Text continues on page 29

Compass Points tables on pages 26 and 27



"Vision is Indispensable to Progress"

Cross-country counter—showcase of free enterprise

Free choice in a free market—that's what "just looking" means to more than 20 million Americans shopping in the nation's department stores every weekday. The department store shapes its existence around *you*, the customer—you with your love of home and family, your desire to be well-dressed, your enthusiasm for travel, sports, social life.

Today's popular retail merchant, with an alert eye to competition, applies experience, judgment and imagination to the selection and development of more and more quality merchandise. He presents it in attractive displays and timely pro-

motions. He watches trends in taste. He studies changing patterns in living. He continually improves the appearance, comfort and efficiency of his store. His goal—a growing share in a mounting \$15 billion annual sales volume, won through your confidence in the integrity of his firm name.

At this moment, your favorite department stores are entering into exciting new areas of progress and

service: simplified selling and intensive consumer research; prepackaging; specialized personnel training; functional suburban branches; engineering techniques applied to stock-taking and record-keeping.

With an unlimited variety of goods from many lands placed before them, thanks to the individual initiative of our nation's retailers, the American people enjoy a freedom of choice unmatched throughout the world.

BANKERS TRUST COMPANY

16 WALL STREET, NEW YORK 15, N. Y.

MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION



39 COMPASS POINTS OF BUSINESS

CENSUS			EMPLOYMENT				PRICES				
	1 POPULATION	2 NAMES IN REFERENCE BOOK	3 EMPLOYMENT Civilian	4 EMPLOY- MENT Agricultural	5 EMPLOY- MENT Nonagricultural	6 UNEMPLOY- MENT	7 CONSUMERS' PRICES	8 RETAIL PRICES	9 WHOLESALE PRICES	10 INDUSTRIAL STOCK PRICE AVERAGES	
	Millions	Thousands	Millions	Millions	Millions	Millions	Index	Index	Index	Dollars	
1914	99.1	1,655	37.6	11.4	26.2	...	42.9	....	43.3	81.03
1919	105.1	1,711	42.0	10.5	31.5	...	74.0	....	88.1	99.78
1920	106.5	1,821	41.3	10.7	30.6	...	85.7	....	98.1	90.04
1921	108.5	1,927	37.7†	10.8†	26.9†	...	76.4	....	62.0	73.48
1929	121.8	2,213	47.6	10.0	36.3	1.5	73.3	120.9	61.9	311.24	
1930	123.1	2,183	45.5	9.9	34.3	4.3	71.4	....	56.1	236.34
1931	124.0	2,125	42.4	9.8	31.3	8.0	65.0	....	47.4	138.58
1932	124.8	2,077	38.9	9.7	28.0	12.1	58.4	....	42.8	64.57
1939	130.9	2,116	45.8	9.3	35.6	9.5	59.4	99.0	50.1	142.66	
1940	132.0	2,156	47.5	9.5	38.0	8.1	59.9	100.6	51.1	134.74	
1941	133.2	2,171	50.4	9.1	41.3	5.6	62.9	108.3	56.8	121.82	
1942	134.7	2,156	53.8	9.3	44.5	2.7	69.7	124.9	64.2	107.20	
1943	136.5	2,027	54.5	9.1	45.4	1.1	74.0	134.0	67.0	134.81	
1944	138.1	1,859	54.0	9.0	45.0	.7	75.2	137.5	67.6	143.32	
1945	139.6	1,913	52.8	8.6	44.2	1.0	76.9	141.4	68.8	169.82	
1946	141.3	2,146	55.2	8.3	46.9	2.3	83.4	155.2	78.7	191.65	
1947	144.0	2,410	58.0	8.3	49.8	2.1	95.5	180.1	96.4	177.58	
1948	146.6	2,555	59.4	8.0	51.4	2.1	102.8	192.7	104.4	179.95	
1949	149.2	2,684	58.7	8.0	50.7	3.4	101.8	187.7	99.2	179.48	
1950	151.7	2,692	60.0	7.5	52.5	3.1	102.8	189.0	103.1	216.31	
1951	154.4	2,614	61.0	7.1	54.0	1.9	111.0	206.8	114.8	257.64	
1952	157.0	2,643	61.3	6.8	54.5	1.7	113.5	210.4	111.6	270.76	
1953	159.7	2,673	61.9	6.5	55.4	1.5	114.4	209.1	110.1	275.96	
1954	162.4	2,639	61.2	6.5	54.7	3.2	114.8	208.6	110.2	333.91	
'54	I	161.3	2,660	60.0	5.6	54.4	3.5	115.0	208.9	110.3	292.64
	II	162.0	2,641	61.3	6.8	54.4	3.3	114.9	208.6	110.3	320.56
	III	162.7	2,642	62.1	7.3	54.8	3.2	115.0	209.0	110.3	346.67
	IV	163.5	2,644	61.5	6.2	55.3	2.8	114.4	207.6	109.7	375.79
'55	I	164.2	2,644	60.2	5.2	55.0	3.2	114.3	207.3	110.3	→ 405.69

SALES						INVENTORIES			
	21 FARM RECEIPTS <i>Million dollars</i>	22 EXPORTS <i>Million dollars</i>	23 IMPORTS <i>Million dollars</i>	24 RETAIL SALES <i>Million \$</i>	25 WHOLESALE SALES <i>Million \$</i>	26 MANUFACTUR- ING SALES <i>Million \$</i>	27 RETAIL INVENTORIES <i>Million \$</i>	28 WHOLESALE INVENTORIES <i>Million \$</i>	29 MANUFACTURING INVENTORIES <i>Million \$</i>
1914	6,039	2,114	1,789	...	...	...	...	...	...
1919	14,570	7,920	3,904	36,549	...	60,509	...	...	12,906
1920	12,606	8,228	5,278	41,364	...	63,659	...	...	13,484
1921	8,116	4,485	2,509	32,954	...	41,897†	...	...	10,705†
1929	11,299	5,241	4,399	48,459	37,814	70,262	7,298	4,024	12,775
1930	9,050	3,843	3,061	41,989	...	57,017	...	3,497	11,265
1931	6,369	2,424	2,091	34,752	...	42,951	...	2,665	9,105
1932	4,735	1,611	1,323	25,013	...	30,774	...	2,307	7,332
1939	8,582	3,177	2,318	42,042	26,244†	61,340	5,285	3,075†	11,516
1940	9,056	4,021	2,625	46,375	28,919	70,313	5,819	3,255	12,873
1941	11,619	5,147	3,345	55,274	36,394	98,069	7,371	4,073	17,024
1942	16,136	8,079	2,756	57,212	41,109	125,158	7,438	3,830	19,348
1943	20,003	12,965	3,381	63,235	45,966	153,843	7,065	3,759	20,171
1944	21,153	14,259	3,929	70,208	49,828	165,387	7,105	3,969	19,578
1945	22,125	9,806	4,159	78,304	53,708	154,481	7,442	4,625	18,457
1946	25,336	9,738	4,942	102,488	71,915	151,402	11,231	6,606	24,620
1947	30,020	14,430	5,756	119,604	87,263	191,010	13,372	7,613	29,032
1948	30,464	12,653	7,124	130,521	95,172	211,560	15,190	7,982	31,782
1949	28,129	12,051	6,622	130,721	88,252	196,997	14,570	7,913§	29,038
1950	28,611	10,275	8,852	143,689†	103,896	231,415	18,699§	10,474	34,534§
1951	33,084§	15,030	10,967	158,223	113,168	266,460	19,904	11,068	43,123
1952	32,648	15,177	10,714	164,085	112,325	276,548	20,234	11,310	44,442
1953	31,188	15,698	10,875	170,742	111,990	303,356	21,208	11,695	46,947
1954	30,211	15,059	10,205	170,664	109,291	287,707	22,090	11,562	44,017
'54	I	6,771	3,395	2,501	37,946	25,252	71,332	11,843	45,959
	II	6,058	4,298	2,733	43,228	26,742	72,137	11,488	44,684
	III	7,876	3,549	2,427	42,425	28,608	70,615	11,752	43,236
	IV	9,506	3,817	2,544	47,068	28,689	73,623	11,562	44,017
'55	I	6,386	3,634	2,609	→ 40,674	26,778	→ 75,995	11,630	→ 43,525

→ Quarterly figures that are significant either for their change or their lack of change from previous levels. First quarter figures for most series are based upon preliminary estimates and incomplete data. Sources of the data are available on request.

a record of business activity

INCOME

11 WEEKLY HOURS Indust. Workers Hours	12 WEEKLY EARNINGS Indust. Workers Dollars	13 DISPOSABLE PERSONAL INCOME Billion Dollars	14 DISPOSABLE INCOME Per Capita 1954 Dollars	15 CORPORATE PROFITS AFTER TAXES Billion dollars
49.4	11.01	33.2	894	1.9
46.3	22.08	63.5	934	5.7
47.4	26.30	66.8	838	3.9
43.1	22.18	52.8	730	0.0
44.2	25.03	83.1§	1,069§	8.3§
42.1	23.25	74.4	973	2.5
40.5	20.87	63.8	908	-1.3
38.3	17.05†	48.7	766	-3.4
37.7	23.86	70.4	1,041	5.0
38.1	25.20	76.1	1,106	6.5
40.6	29.58	93.0	1,274	9.4
42.9	36.65	117.5	1,435	9.5
44.9	43.14	133.5	1,517	10.5
45.2	46.08	146.8	1,618	10.4
43.4	44.39	150.4	1,607	8.3
40.4	43.82	159.2	1,551	13.4
40.4	49.97	169.0	1,412	18.2
40.1	54.14	187.6	1,429	20.3
39.2	54.92	188.2	1,422	15.8
40.5	59.33	206.1	1,518	22.1
40.7	64.77	226.1	1,515	18.7
40.7	67.97	236.9	1,525	17.2
40.5	71.69	250.1	1,572	18.3
39.7	71.65	253.5	1,561	17.8
39.5	70.97	252.3•	1,560•	17.5•
39.3	70.87	252.9•	1,558•	17.5•
39.6	71.28	253.2•	1,553•	17.4•
40.3	73.30	255.9•	1,569•	18.8•
→ 40.4	74.63	257.0•	→ 1,572•	18.8•

PRODUCTION

16 INDUSTRIAL PRODUCTION (PHYSICAL) Index	17 ELECTRIC POWER PRODUCTION Billions kwh	18 BUILDING PERMITS 120 Cities Million \$	19 EXPENDITURES FOR PLANT & EQUIPMENT Billion dollars	20 GROSS NATIONAL PRODUCT Billion dollars
33	...	735	...	38.5
39	...	1,181	...	77.9
41	56.6	1,256	...	86.2
31	53.1	1,493	...	70.3
59	116.7	2,490	9.2	104.4§
49	114.6	1,408	7.6	91.1
40	109.4	1,006	4.7	76.3
31	99.4	336	2.6	58.5
58	161.3	1,029	5.5	91.1
67	179.9	1,104	6.5	100.6
87	208.3	1,196	8.2	125.8
106	233.1	644	6.1	159.1
127	267.5	419	4.5	192.5
125	279.5	709	5.2	211.4
107	271.3	1,028	8.7	213.6
90	269.6	2,089	14.8	209.2
100	307.4	2,470	20.6	232.2
104	336.8	3,111	22.1	257.3
97	345.6	3,131	19.3	257.3
112	388.7	4,466	20.6	285.1
120	432.3	3,654	25.6	328.2
124	463.1	3,523	26.5	346.1
134	516.5	4,034	28.4	364.9
125	544.6	4,143	26.8	357.2
124*	131.5	948	6.3	355.8•
124*	131.4	1,119	6.9	356.0•
123*	138.7	1,084	6.6	355.5•
128*	143.1	992	7.0	362.0•
→ 133*	145.8	1,157	6.3	→ 369.0•

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III
IV
'54
I '55

FEDERAL

30 FEDERAL RECEIPTS Million dollars	31 FEDERAL EXPENDITURES Million dollars	32 GROSS FEDERAL DEBT Billion dollars
735	735	1.2
5,152	18,515	25.5
6,695	6,403	24.3
5,625	5,116	24.0
4,033	3,299	16.9
4,178	3,440	16.2
3,190	3,652	16.8
2,006	4,535	19.5
5,103‡	8,966‡	40.4
5,265	9,183	43.0
7,227	13,387	49.0
12,696	34,187	72.4
22,202	79,622	136.7
43,892	95,315	201.0
44,762	98,703	258.7
40,027	60,703	269.4
40,043	39,289	258.3
42,211	33,791	252.3
38,246	40,057	252.8
37,045	40,167	257.4
48,142	44,633	255.2
62,129	66,145	259.1
65,218	74,607	266.1
70,216	64,851	274.4
24,638	15,480	273.3
20,340	17,807	271.9
13,229	16,577	273.6
12,009	14,987	278.8
22,846	15,474	276.7

FINANCE

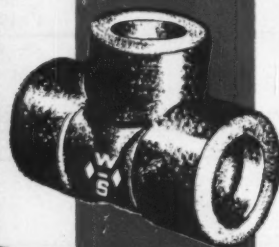
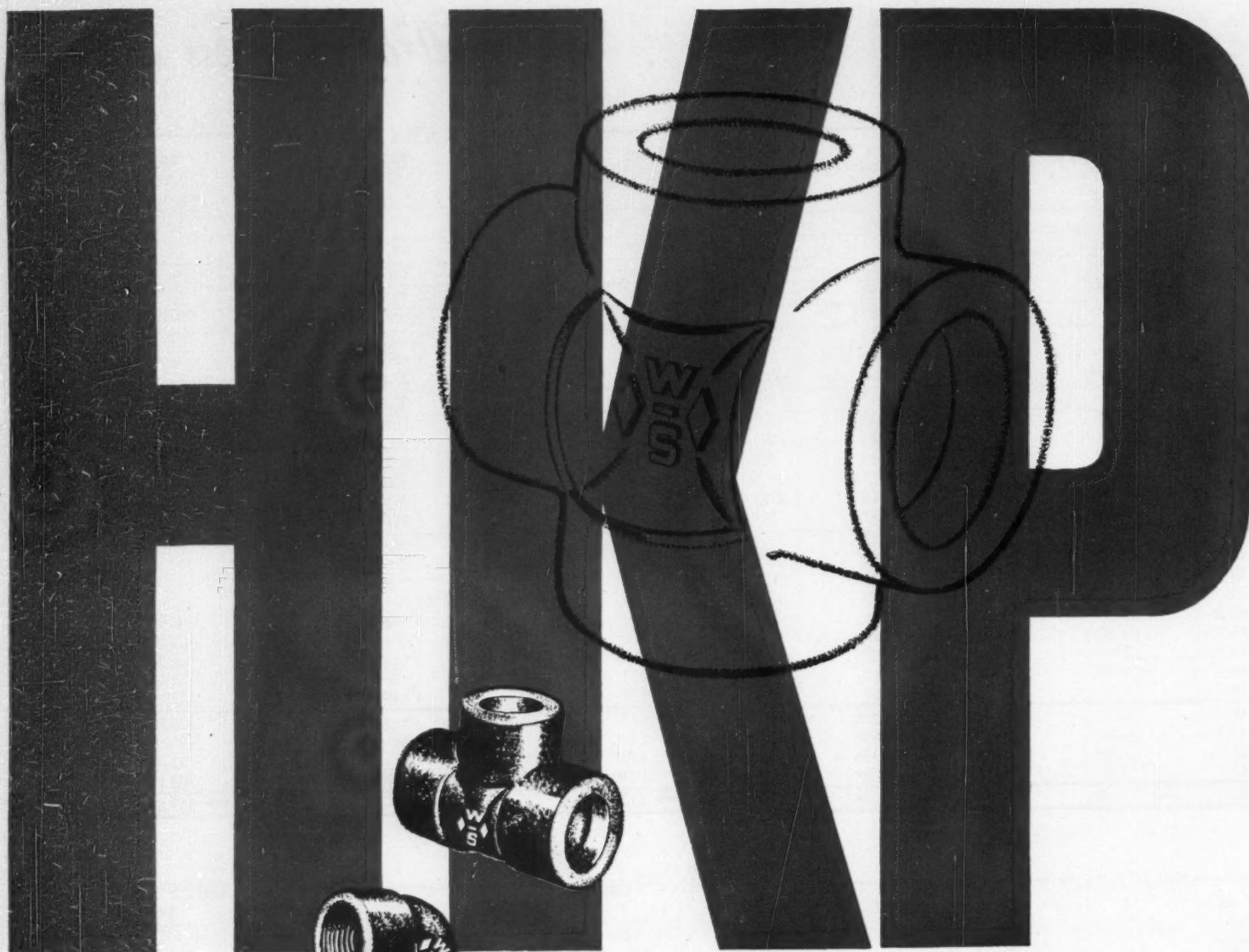
33 CONSUMER CREDIT Outstanding Billion dollars	34 LOANS OF COMMERCIAL BANKS Billion dollars	35 CURRENCY OUTSIDE OF BANKS Million \$	36 DEMAND DEPOSITS ADJUSTED Million \$	37 INTEREST ON BUSINESS LOANS Per cent
...	13.2	1,533	10,082	...
...	22.4	3,593	17,624	6.58
...	28.1	4,105	19,616	6.68
...	26.1	3,677	17,113	5.53
6.4	35.7	3,557	22,809	5.83
5.8	34.5	3,605	20,967	4.85
4.8	29.2	4,470	17,412	4.30
3.6	21.8	4,669	15,728	4.71
7.2	17.2	6,401	29,793	2.10
8.4	18.8	7,325	34,945	2.10
9.2	21.7	9,615	38,992	2.00
6.0	19.2	13,946	48,922	2.20
4.9	19.1	18,837	60,803	2.60
5.1	21.6	23,505	66,930	2.40
5.7	26.1	26,490	75,851	2.20
8.4	31.1	26,730	83,314	2.10
11.6	38.1	26,476	87,121	2.10
14.4	42.5	26,079	85,520	2.50
17.1	43.0	25,415	85,750	2.70
20.8	52.2	25,398	92,272	2.70
21.5	57.7	26,315	98,234	3.10
25.8	64.3	27,494	101,500	3.50
28.9	68.3	28,091	103,300	3.69
28.5	71.2	27,400	106,900	3.61
28.2	67.1	26,900	96,700	3.72
28.4	67.3	27,093	98,132	3.60
28.8	67.2	26,900	101,200	3.56
29.4	71.2	27,400	106,900	3.55
→ 29.5	71.3	26,800	101,332	3.52

FAILURES

38 BUSINESS FAILURES Number	39 LIABILITIES OF FAILURE Million \$
18,280	357.9
6,451	113.3
8,881	295.1
19,652	627.4
22,909	483.3
26,355	668.3
28,285	736.3
31,822	928.3
14,768	182.5
13,619	166.7
11,848	136.1
9,405	100.8
3,221	45.3
1,222	31.7
810	30.2
1,130	67.3
3,476	204.6
3,252	234.6
9,246	308.1
9,162	248.3
8,058	259.4
7,611	283.3
8,862	394.2
11,086	462.6
2,895	134.6
2,883	122.6
2,587	101.2
2,721	104.2
→ 2,854	→ 121.1

1914
1919
1920
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1931
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†Figures for this and prior dates are from another source and are not strictly comparable with later data.
‡Beginning in 1937 tax refunds are deducted from receipts and are not included among expenditures.
•Annual rate seasonally adjusted. *Quarterly figures seasonally adjusted. §Series revised from this date.



Watson-Stillman Fittings is known throughout American industry for the high quality of its heavy duty, forged carbon, stainless and alloy steel pipe fittings. The petroleum, chemical, power, processing and allied industries, as well as the nation's railroads, have learned that when high pressures, high temperatures and corrosion must be combatted, it takes a Watson-Stillman fitting to stand up to the

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QUAKER PIONEER RUBBER MILLS, SAN FRANCISCO, CAL.	QUAKER RUBBER CORPORATION, PHILADELPHIA, PA.
THE RIVERSIDE METAL COMPANY, RIVERSIDE, N. J.	THE WATSON-STILLMAN COMPANY, ROSELLE, N. J.
WATSON-STILLMAN FITTINGS, ROSELLE, N. J.	

H. K. PORTER COMPANY, INC.

Executive Offices: Alcoa Building, Pittsburgh 19, Pa.

lar volume) moved up slightly to 137, one point below the record reached two years ago. The most considerable gains were scored by those industries which receded most during the 1953-1954 slide: metals, transportation equipment, and machinery.

Rubber, Copper, Glass, and Steel

The industries which depend directly on automobile production for a large segment of their market—rubber, copper, glass—have not only moved upward along with auto production, but have actually surpassed the gains in auto production. About 33 per cent of rubber production and 15 per cent of copper production are absorbed by the auto-makers.

More steel poured from the nation's mills and furnaces last month than at any time since March 1953. Steel output is widely expected to continue at this phenomenal rate of 95 per cent of capacity through the rest of the second quarter. A letdown in output which had been anticipated in June has now been pushed forward to August. Estimates of production for the entire year have been steadily revised upward week by week and now cluster about a point only slightly below the 111.6 million tons poured in the record year 1953.

Increased steel orders have been coming from virtually all steel consumers, including the farm market and railroads. Difficulty was sometimes encountered in securing steel as users attempted to build inventories while striving to satisfy the stepped-up demand from their own customers. Perhaps the widely expected price hike in steel this Summer has led to an added flurry of immediate buying.

The Boom in Automobiles

Production and sales records in the automobile industry have been breaking like balloons at a party. More cars were produced in the first quarter than in any other quarter in history. The record total of 781,000 cars reached in March was almost matched in April (a shorter month) as production continued at the startling rate of about 30,000 cars per day, which means that cars have been rolling off the assembly lines at the rate of one each three seconds, night and day.

Last month new cars—colorful as Easter eggs—were produced at a rate close to 9 million per year. Although some industry spokesmen have recently raised their estimates of 1955 output from 5.5 million to about 7 million cars, the current output still calls for a considerable decline in the second half of the year. The prior record year was 1953 when 6.1 million cars were produced. During the first half of 1955 more than 4 million cars will probably be made. Before 1949 there had been only one year—1929—in which more than 4 million cars were made during an entire year.

One of the important factors in the demand for new cars is the scrapage rate of old models.

Regional Highlights...

- Preliminary data from 140 cities scattered throughout the country reflected increases from a year ago in retail sales in the first quarter of 1955 amounting to 4 per cent in New England, East 6 per cent, South 3 per cent, Middle West 7 per cent, Northwest 2 per cent, Southwest 6 per cent, and Pacific Coast 7 per cent.
- Electric power output in mid-April was 15 per cent above a year ago for the United States as a whole; the gains ranged from 25 per cent in the Southeast region to 4 per cent in the West Central States.
- Bank debits in New York City in the first quarter of 1955 were 0.3 per cent above a year ago, compared with an increase of 8 per cent in 344 other reporting centers.
- A survey of Midwest farm buying intentions, conducted by the Midwest Farm Paper Unit found that among other things, almost one-third of the farm families planned to paint and redecorate their homes, 12 per cent will buy a new food freezer, 16 per cent a television, 14 per cent an automobile, 6 per cent a tractor, and 43 per cent planned a vacation trip in 1955.

This in turn depends on the prices of used cars, which in turn depend on the number of new cars on the roads. So that to some extent the prodigious production of cars may be helping to increase the market.

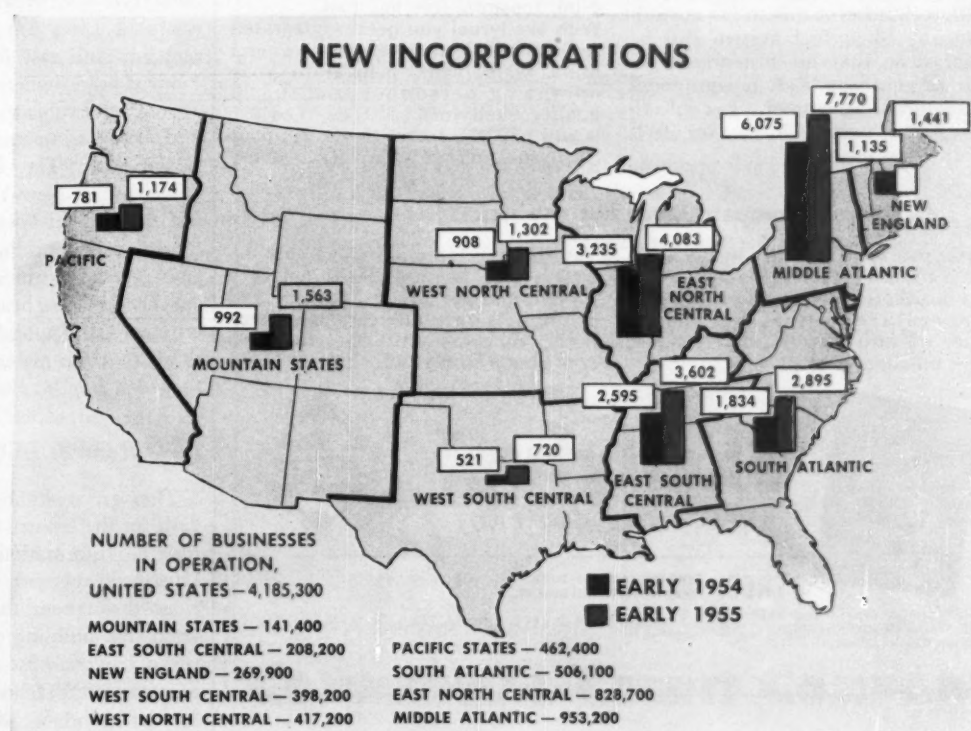
The supplies of new cars with dealers rose noticeably to 624,277 in the beginning of April, to reach a post-war peak. However, at the present rate of sales which have been outrunning output, new car inventories are entirely reasonable. Notwithstanding the expansion in sales,

The National Automobile Dealers Association reports that operating profits for new car and truck dealers are the worst in fifteen years.

Questions for Builders

Can the construction industry continue to grow or will it soon return to the boom-bust movements of earlier decades? The primary concern about the continuation of the building boom centers in housing, which accounts for

Hitting an all-time high in March, new incorporations were 28 per cent more numerous than a year ago. For the first quarter as a whole, increases from a year ago ranged from 23 per cent in the Middle Atlantic and East North Central States to 58 per cent in the Pacific region. The data in the chart cover the first two months in 1955; March figures were not yet available when the art work was done. New incorporations are one of the "eight leading series" suggested as indicators tending to foretell the future direction of business.





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about 40 per cent of total construction. Other segments—highways, schools, hospitals, commercial buildings—seem assured of gargantuan growth in the next few years. But many are the expressions of doubt, particularly from lenders, about home building.

Can the current rate of 1.4 million houses—an all-time high—which lends support to many other industries be maintained in the years to come? Those who see an early drop point to the data on declining rate of household formation. However, the Census Bureau says that such data are very tentative. And there are other sources of demand for new homes in addition to new families: people moving from cities to suburbs, from farm to city, and from area to area, larger families, replacement, and slum clearance. Despite the rising rate of vacancies in some sections, there is no nationwide housing pattern. Empty houses in the Northeast have little dampening effect on building in the South or West where a real demand still occurs.

For a period of twenty years, from 1930 to 1949, there was only one year—1941—when home construction approached household formation. Despite the giant strides that have been made in overcoming the backlogs of the past, about 40 per cent of all families still do not own their own homes. Of course, many of these families prefer to rent but with easy financing, as in the past year, ownership sometimes appears preferable to renting. After an encompassing study of the housing market, The First National City Bank of New York concluded last month that "despite the headlong pace of building, evidence of reaching the saturation point is not conclusive." The heads of the Government's FHA and HHFA both think that the market can support this high level of building.

New Records in Construction

The green light continued to flash for the construction boom last month. Information gathered by DUN & BRADSTREET, INC. from 217 cities throughout the nation indicated that building permits, which run a few months ahead of actual construction, reached a new high for the month in March. The nationwide total was up 6 per cent

from last year, while the Mountain States scored an increase gain of 45 per cent and the Middle Atlantic region was down 17 per cent from last year.

New construction contracts, gathered by the F. W. Dodge Corporation in 37 States east of the Rockies, were 40 per cent larger than the comparable total a year ago, pointing to peak building for several months to come. This was the highest March total on record and capped a first quarter total of unprecedented proportions.

More money was spent for construction in the first quarter of 1955 than in any other first quarter in history, setting an annual rate of \$41 billion as compared with \$38 billion in the prior quarter and \$37.2 for the record-breaking year 1954. In the three-month period total construction was up 13 per cent from last year while expenditures for new non-farm dwelling units were up 39 per cent. Expenditures for industrial and commercial structures were up 6 and 25 per cent respectively from last year. However, some building fell below the year-ago levels. Public housing was down 38 per cent; railroad construction was off 17 per cent.

Housing starts in March held at the record rate of 1.4 million, to the astonishment of some experts who had set their expectations between 1.2 and 1.3 million for the entire year.

Mortgage Debt and Foreclosures

The rise in non-farm housing debt, by nearly \$10 billion last year, carried the total to \$76 billion which is about 30 per cent of disposable income. In 1939 mortgage debt accounted for 23 per cent of income, the same proportion as in 1939. About 26,000 non-farm mortgages were foreclosed last year. While this total was about 20 per cent above 1953 and the highest since 1942, it was still quite small considering the gargantuan growth in the total volume of outstanding mortgages in recent years.

Although the number of delinquent accounts among consumers is still only a fraction of 1 per cent, they have increased perceptibly during the past year. The American Collectors Association reports that repossessions of goods purchased

on installments were 30 per cent higher than a year ago in March and that accounts turned over for special collection were up 16 per cent.

Self-generating Sales

While there are persistent complaints that various industries, particularly cars and houses, are using up future demand, it is possible that the boom has become to some extent self-generating. Cars are a virtual necessity for suburban living, the yearning for which has sparked the superbloom in residential building. High-level construction activity helps to increase the purchasing power for new cars and other goods; the resultant spurt in production thus helps in turn to provide increased purchasing power for new homes and other goods. In producing and selling unexpected quantities of goods, producers may be creating future demand as well as filling current needs.

To cheer those worried by the possible dearth of markets in the year to come are data such as these, compiled by *Electrical Merchandising*. Of all the wired homes in the nation, these are the percentages without these appliances: air conditioners, 95 per cent; dishwashers, 96 per cent; clothes dryers, 93 per cent; garbage disposers, 95 per cent; freezers, 85 per cent; vacuum cleaners, 38 per cent; television, 26 per cent.

Consumers usually spend more for furniture and household goods than they do for automobiles and parts.

According to preliminary information from retailers in 66 cities in 39 States, shoppers spent about \$15.1 billion dollars last month, topping the year-ago total by about 5 per cent. This would be a new peak for the month. Auto dealers continued to chalk up the most considerable year-to-year gains in volume.

Retail trade during the 1955 Easter shopping season attained a high mark never reached before. Many reduced price promotions of apparel helped to spark shoppers' interest after the Easter shopping spree had ended. With many family budgets tied pretty closely to installment payments for automobiles, appliances, and new homes, consumers have been devoting a smaller share of their incomes to apparel.

As in recent months, the most

pronounced year-to-year gains at retail were achieved in the South and Southwest. The steady development of industry in these sections continues to lift incomes from the below-average levels of recent decades. Despite the unusually high overtime-fattened paychecks in Detroit, retail trade there has not kept up with nationwide gains, reflecting, perhaps, apprehension about possible work stoppages.

During March the total dollar volume of retail trade amounted to \$14.6 billion, 8 per cent higher than the level of a year earlier. This was the fifth straight month in which retail trade topped the year-ago level and set a new record for the month.

Mirroring largely the purchasing power of the more modest income groups, chain store sales scored hefty gains during March. Montgomery Ward reported sales up 13 per cent from last year, while volume at Sears Roebuck rose 15 per cent.

Factory Orders Up

New orders were booked at an accelerated pace during March, according to early information from manufacturers in 140 cities in 46 States. The backlog of unfilled orders apparently swelled slightly to about \$49 billion since shipments have been outpaced by new orders. While this total was the highest since May 1954, it is considerably below the \$76 billion in September 1952, before the substantial cutbacks in defense orders.

Although there is much less reluctance to increase inventories than there was a year ago, most manufacturers have not been able to expand their stocks in recent months. In early March manufacturers' inventories were \$43.9 billion, about 5 per cent below a year ago. The efforts of many manufacturers of durables to rebuild their inventories should give added impetus to orders and output in the months to come.

The time of doubt for the economy has now shifted from the second half of 1955 to the first half of 1956. While many observers had been expecting weakness in the coming months, concern has now been transferred to 1956. However, it seems unlikely that a serious slippage would be tolerated in an election year.

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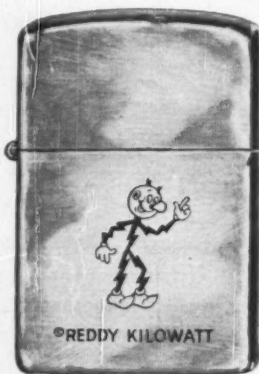
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Failures . . .

Business failures rose 12 per cent in March to 1,038, the heaviest toll in a year. Casualties were higher only once, in March 1954, in the entire post-war period. However, this was the second consecutive month in which mortality was below the previous year's level. Down 6 per cent from 1,102 a year ago, failures were also fewer than in March of pre-war 1940 when 1,197 casualties were reported.

Businesses failed at a rate of 41 for each 10,000 enterprises listed in the DUN & BRADSTREET *Reference Book*, according to DUN's FAILURE INDEX which projects monthly mortality to an annual rate and adjusts for seasonal variation. This rate edged up from 39 in February, but remained below the 44 a year ago and the pre-war rate of 61 which occurred in 1940.

Contrasting with the increase in the number of failures in March, liabilities dipped 2 per cent to \$41,209,000. Casualties of all sizes were more numerous than in February, although the sharpest upswing occurred among small failures involving liabilities under \$5,000. These mounted 12 per cent above their 1954 level, whereas failures in other liability classes were fewer than they were a year ago.

March casualties exceeded those

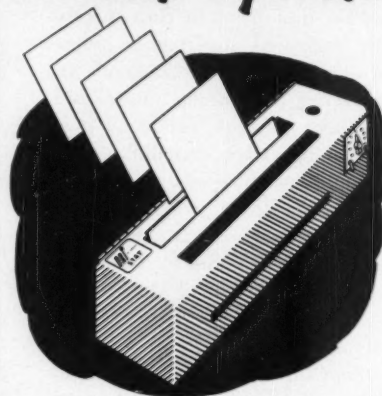
FAILURES BY DIVISIONS OF INDUSTRY

(Current liabilities in millions of dollars)	Number 3 Months 1955	Number 3 Months 1954	Liabilities 3 Months 1955	Liabilities 3 Months 1954
MINING, MANUFACTURING...	608	597	47.5	49.8
Mining—Coal, Oil, Misc...	16	15	1.6	1.2
Food and Kindred Products	47	45	4.1	3.7
Textile Products, Apparel...	140	155	7.7	7.2
Lumber, Lumber Products...	69	77	3.5	3.7
Paper, Printing, Publishing...	32	39	1.9	1.6
Chemicals, Allied Products...	13	21	.9	1.2
Leather, Leather Products...	21	23	.9	1.5
Stone, Clay, Glass Products...	10	10	1.0	.5
Iron, Steel, and Products...	46	38	6.2	4.8
Machinery...	83	64	11.2	15.8
Transportation Equipment...	17	10	2.1	1.7
Miscellaneous...	114	100	6.5	6.3
WHOLESALE TRADE...	337	289	13.7	12.9
Food and Farm Products...	86	73	3.4	2.9
Apparel...	19	13	.5	.2
Dry Goods...	11	17	.5	.9
Lumber, Bldg. Mats, Hdwre...	37	29	1.6	1.6
Chemicals and Drugs...	10	12	.2	.4
Motor Vehicles, Equipment...	18	14	.5	.4
Miscellaneous...	156	131	7.0	6.5
RETAIL TRADE...	1,388	1,450	30.5	46.4
Food and Liquor...	229	257	4.1	3.8
General Merchandise...	54	53	1.4	1.7
Apparel and Accessories...	251	229	4.9	4.5
Furniture, Furnishings...	212	264	6.9	21.3
Lumber, Bldg. Mats, Hdwre...	76	72	1.8	1.9
Automotive Group...	120	172	3.1	5.2
Eating, Drinking Places...	252	227	4.9	4.3
Drug Stores...	33	39	.7	.7
Miscellaneous...	161	137	2.8	3.0
CONSTRUCTION...	308	338	21.1	14.5
General Bldg. Contractors...	99	118	12.7	7.3
Building Subcontractors...	186	202	6.9	6.0
Other Contractors...	23	18	1.5	1.1
COMMERCIAL SERVICE...	213	221	8.3	11.0
TOTAL UNITED STATES...	2,854	2,895	121.1	134.6

Liabilities are rounded to the nearest million; they do not necessarily add to totals.

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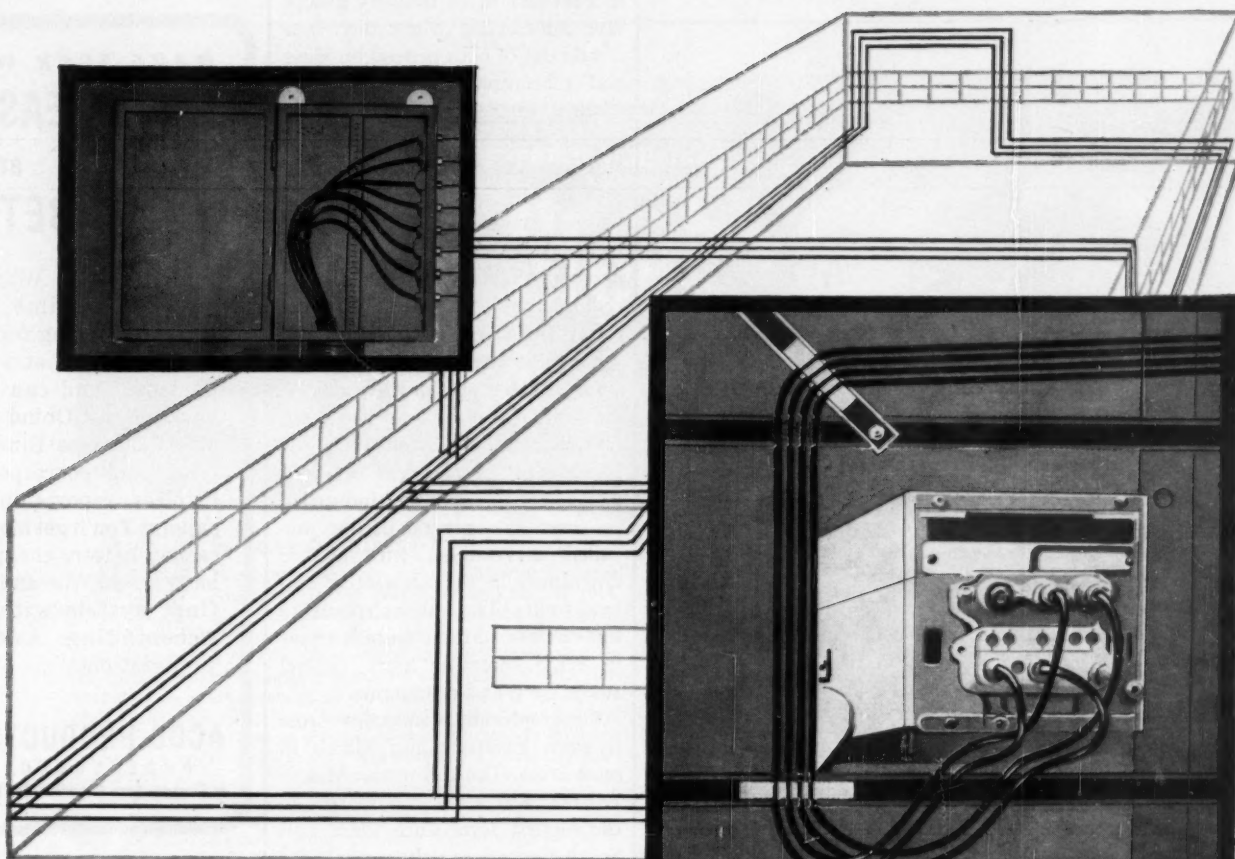
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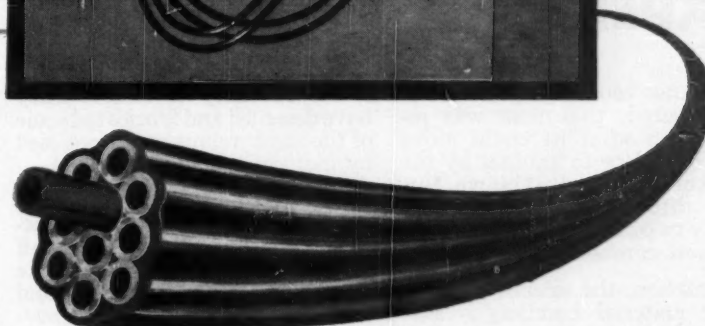
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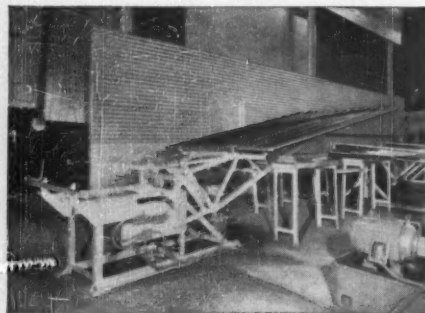
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in February in all industry groups save construction where there was a mild dip in both general building and subcontracting. The month's upturn in manufacturing came largely from the lumber, chemical, and iron and steel industries. Failures in iron and steel and in machinery manufacturing climbed to record highs. All lines of retailing had more failures than in the preceding month; casualties among eating and drinking places reached the highest level in fifteen years.

Of the five major divisions of industry, manufacturing had more failures than in March 1954; the increase of 14 per cent occurred principally in the heavy industries. In contrast, a general decline prevailed in retailing, with notable downturns in the automotive and food trades. The only exceptions to this downward trend from last year in retail mortality were apparel stores, bars, and restaurants.

Geographically, mortality rose between February and March in most areas. The toll in the Middle Atlantic States climbed sharply to the highest level since 1942; East South Central casualties reached a six-year peak, with a notable upturn in Tennessee.

Compared with a year ago, however, five areas had fewer failures this March. The sharpest decline from a year ago centered in the South Atlantic States of Maryland, Virginia, Georgia, and Florida.

THE FAILURE RECORD

	March 1955	Feb. 1955	March 1954	P.C. Chg.†
DUN'S FAILURE INDEX*				
Unadjusted.....	44.0	45.6	46.7	- 6
Adjusted, seasonally	41.1	38.6	43.6	- 6
NUMBER OF FAILURES	1,038	877	1,102	- 6
NUMBER BY SIZE OF DEBT				
Under \$5,000.....	161	108	144	+12
\$5,000-\$25,000....	521	453	558	- 7
\$25,000-\$100,000..	270	242	296	- 9
\$100,000 and over..	86	74	104	-17
NUMBER BY INDUSTRY GROUPS				
Manufacturing....	225	188	198	+14
Wholesale Trade...	119	104	123	- 3
Retail Trade.....	520	412	551	- 6
Construction.....	108	113	143	-24
Commercial Service	66	60	87	-24
(LIABILITIES in thousands)				
CURRENT.....	\$41,209	\$42,056	\$57,280	-28
TOTAL.....	41,289	42,194	57,746	-28

*Apparent annual failures per 10,000 listed enterprises, formerly called Dun's Insolvency Index.
†Per cent change, March 1955 from March 1954.

BUSINESS FAILURES include those businesses that ceased operations following assignment or bankruptcy; ceased with loss to creditors after such actions as execution, foreclosure, or attachment; voluntarily withdrew leaving unpaid obligations; were involved in court actions such as receivership, reorganization, or arrangement; or voluntarily compromised with creditors out of court.

CURRENT LIABILITIES, as used in the Failure Record, have a special meaning: they include all accounts and notes payable and all obligations, whether in secured form or not, known to be held by banks, officers, affiliated companies, supplying companies, or the Government. They do not include long-term, publicly held obligations. Offsetting assets are not taken into account.

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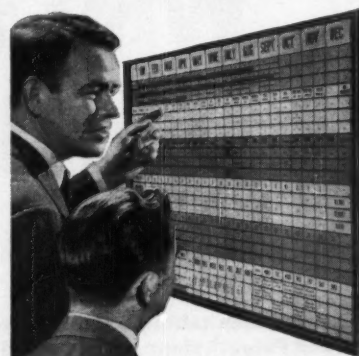


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National Steel for '54



ON SALES AND WAGES

Because of sharply reduced buying by steel consumers in the first three quarters of 1954, National Steel's total sales declined slightly below the half-billion dollar mark, compared with sales of more than six hundred million dollars in 1953, the highest mark in the history of the Company. National's operations were conducted at an average rate of 74 per cent of capacity during the year. Employees enjoyed an hourly rate increase, but total and average wages declined as a result of the reduction in industry volume. In addition to money wages, other substantial payments were made by the Company for such employee benefits as retirement annuities, group insurance, hospitalization and surgical care. An increase in steel prices only partially compensated for the increase in labor cost and related costs of goods and services.

ON INCOME AND TAXES

The change in net earnings for 1954 was primarily the result of the change in operations volume. Dividends were paid in the amount of \$3.00 per share at the rate of 75 cents per quarter. The elimination of the Federal excess profits tax and lower earnings resulted in lower tax payments. Taxes continued to exceed earnings, however, amounting to \$5.26 per share compared with earnings of \$4.12. National Steel's contribution to Federal, State and Local Government tax income during 1954 amounted to more than 38 million dollars.



ON NOW AND THE FUTURE

Continuation of population growth and of the steady upward trend in per capita use of steel—in the United States and the world as a whole—plainly indicate the necessity of continuing expansion of steelmaking capacity in the future.

National Steel's record of consistent growth is being maintained in both current activity and plans for the future. In 1954, provision for replacement of facilities was almost 38 million dollars, the peak amount in the history of the Company. Property additions amounted to approximately 60 million dollars, and expenditure of the same amount is anticipated in 1955.



Notable features of our program of improvement and expansion in 1954 included an increase of 50 per cent in the capacity of the No. 1 electrolytic line at Weirton, which produces our zinc-coated steel, Weirzin. A similar increase was made in the plating capacity of two tin plate lines, one of which is the largest in the steel industry. The



25 YEARS OF PROGRESS

Founded November 7, 1929, the National Steel Corporation has now completed its twenty-fifth full year of operation. In the interim National Steel has increased its steelmaking capacity five-fold, has expanded finishing operations proportionately, and has adopted the latest and finest in steel-producing facilities and methods. In addition to this contribution to America's industrial growth, National Steel has paid a dividend in every quarter since its inception, the March 1955 dividend being the 101st.

ore carrier GEORGE M. HUMPHREY was added to our fleet, and set a new Great Lakes record by hauling 22,379 tons of iron ore in a single trip. With this new ship, and the ERNEST T. WEIR launched the year before, National operates two of the largest carriers on the lakes. The new Labrador-Quebec iron ore field, in which we have a substantial interest, began production on schedule and started the shipment of ore.



In 1955, a blast furnace, now being rebuilt and enlarged from a 20,000-ton to a 50,000-ton monthly capacity, will be placed in service at Great Lakes Steel and will contribute additional pig iron required to bring steel production to full capacity. Another program at this location will increase production of cold rolled sheets by a minimum of 50,000-tons per month, or 600,000 tons per year, by the end of 1955. At Weirton new facilities to begin operation include a completely rebuilt 54-inch continuous hot sheet mill, a five-stand cold mill, a continuous annealing line, and the No. 5 electrolytic line—each of which will be the fastest and highest capacity of its type.

These projects and others scheduled for completion in 1955 will contribute importantly to an increase in the production of finished products, reduction in costs, further improvement of quality, and, therefore, to an increase in the earning capacity of National Steel Corporation.

HIGHLIGHTS OF 1954

	1954	1953
Net Sales	\$484,058,380	\$634,178,060
Net Income	30,334,871	49,174,080
Net Income per share	4.12	6.68
Total Payrolls	137,294,064	159,822,220
Total Dividends Paid	22,009,698	23,862,229

A copy of our Annual Report for 1954 will be mailed upon request.

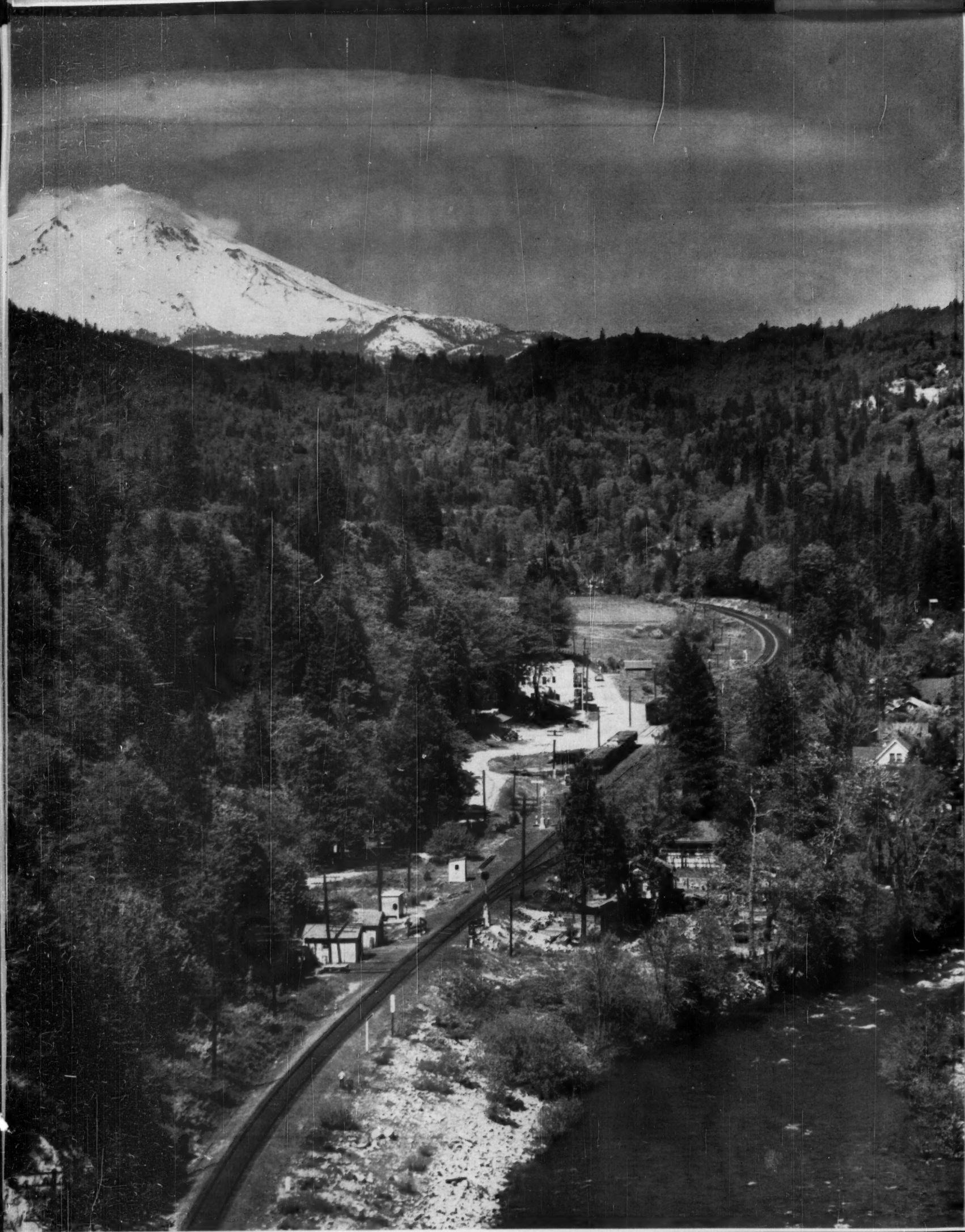
NATIONAL STEEL CORPORATION

Grant Building Pittsburgh, Pa.

Owning and Operating

Weirton Steel Company • The Hanna Furnace Corporation • Great Lakes Steel Corp.
National Steel Products Company • Hanna Iron Ore Company • National Mines Corp.

SERVING AMERICA BY SERVING AMERICAN INDUSTRY





VIEW OF THE CAPITOL LOOKING EAST FROM THE WASHINGTON MONUMENT—DEVANEY PHOTOGRAPH

EXECUTIVES' NEW WORLD

CLARENCE B. RANDALL

Chairman of the Board, Inland Steel Co.

*N*O American business man to-day could fail to look back enviously sometimes to the simplicity of life in business in the days of his forebears. As they brushed their mutt-on-chop whiskers against their high stand-up desks they had troubles, but not our kind of troubles.

Take the period between 1890 and 1914, for example, when we had that great surge of industrial expansion in our country which brought most of the great steel companies into existence. First, at that time there was no world crisis. The Victorian peace had been shattered briefly by Dewey at Manila and the Roughriders in Cuba, but there was no brooding premonition that the new headline of the morning would plunge us into global war. There were no statutes governing collective bargaining with employees. There were no income taxes; a man kept what he earned. And there were no staffs devoted exclusively to the filling out of government forms. True, it was hard to meet a payroll in those days, but a man was free to run his own business as he wanted to, and he felt little obligation to account to anybody for what he did. The concept that he owed something to a vague thing called the public would have been so abhorrent that it would have made his mutt-on-chop whiskers stand straight out.

But I have sometimes wondered whether the unspeakable complexity of business life to-day, in which the social and political problems of the

Active participation in local, state, or national government affairs is more than a birthright. To-day it is one of the foremost responsibilities of America's business leaders. The author discusses here the evolution of the socially-conscious executive and how he can be a force in the framing of a new world.

whole world contend for the attention of the business executive at every turn, sometimes almost crowding out the familiar tribulations of cost, production, and selling policy, does not stem from that very single-minded pursuit of self-interest of the earlier days. Men then closed their eyes to the beginnings of things which torment us now, and we shall never know how many of our problems could have been controlled had they been squarely faced earlier.

To-day it must be clear that each business enterprise is an integral part of the country which it serves, and must prosper or decline in direct relationship with the welfare of the whole. No longer can an executive escape to the monastery of self-interest, free from what goes on outside his own affairs. The world will be upon him

whether he wishes it or not, and he must face it. It is true that under our enterprise system we respond to the incentive of self-interest, but in the broader sense that very self-interest itself compels us to recognize that the welfare of each individual institution depends squarely upon the soundness of our country as a whole.

The man who understands this respects those forces that are bigger than himself, and plays his full part in solving the questions of the day, which so often transcend in importance for his company those problems within the business which he can solve by his own effort. He is driven to become a working member of the society about him, and to dedicate himself above all else to the perpetuation of democracy itself. He cannot escape his modern destiny. "By the

people" means himself: there can be no others.

He therefore tries to make the town in which he lives a better town, both for himself and for his workers. He knows that the greatest productivity comes from employees who are healthy and happy. If his plant is in an isolated community, this takes him quickly to the necessity of using corporate funds for the establishment of modern schools, churches, and hospitals. If, however, his plant is in a large city, he has the imagination to see that the same necessity is present though diffused throughout a large area, and he therefore deems it proper to use his own time and his company's funds to raise the standards in that community through the schools, churches, and hospitals.

He recognizes that in this modern world, with its social consciousness, there will be no social vacuums, and that unless the business man bears the responsibility of meeting the social problems of the community through the familiar exercise of private initiative which he so values in his business, government will fill those needs and politicians will exploit human misery.

So he throws himself with enthusiasm into such causes as the Community Fund, and by his example he helps to persuade the general public to assume the burdens of the underprivileged through voluntary effort. He encourages his subordinates to give their time to such causes and to share the responsibilities of citizenship through serving on the boards of educational organizations and other civic enterprises, and suddenly, to his surprise, he finds that out of what he considered an obligation comes an inward satisfaction that is one of the most genuine compensations of his life.

But these compelling community responsibilities are only the beginning. Each day the world continues to press in as the responsibility of the United States in the modern world grows and intensifies. This new type of executive sees his tax burden mounting to support our gigantic defense posture, is sad that each new generation of able young men must prepare for war. He wants all this to stop.

At first he is so uninformed that he merely denounces whatever it is that is being done, and calls out rather loudly that "they" should do something different. But eventually, with growing understanding, comes the still small voice inside, and the devastating realization that there is no "they," just "we"; so he gropes towards something that he himself can do about the situation and its outcome.

He then recognizes how little he himself actually knows at first hand about the great forces that are at work in the world. He begins to read

more discriminatingly, and to ponder upon what he has read. Eventually, comes the day when he and his wife take their first trip abroad, and his horizons widen and his interests are stimulated by those new experiences. Gradually opinions begin to form in his mind and convictions take shape that are his, as distinguished from those that he has borrowed from others and thought of as his own.

Growth of Confidence

Ultimately, a reverse flow of ideas is generated. He begins to express to others opinions that are based upon his own conviction, and he starts to play his part in the forming of public opinion. He learns now to listen, and to hear the other side, but he also feels a strong urge to bring others to his viewpoint when he senses that he is right.

He then wishes, of course, that he could speak and write, and feels a sense of inferiority that others seem to do so well while he is tongue-tied. He calls in a public relations expert, but that doesn't work too well because the speeches he begins to give reveal themselves to his old friends as the thinking of the public relations man, and not his own.

Finally, he discovers two things: First of all, that people respect him for the man that he is, and really want his help in thinking through the troubled questions of the day; and secondly, he finds that he can say from a platform the same things that he says to his friends at lunch, because he is inwardly sure that he knows what he is talking about, and that he is right. At that point we have the modern business man taking the place that he should in forming sound public opinion, without which no democracy can survive.

Incidentally, when this business man finds that others are turning to him because they re-

spect his leadership in matters totally unrelated to his company, or its products, he is suddenly surprised to find that this reacts favorably upon his business. If he were trying consciously to bring that about he would fail, because his efforts would not be genuine, but the integrity of his effort brings him an unexpected by-product. Other men in their own lives are struggling to resolve the same questions, and they suddenly come to believe that a man whose judgments can be trusted in the questions of the day probably runs a good show in his own company and can be trusted there.

The most difficult question that the socially conscious business man has to face, however, is that of what to do about entering public life. He is shocked not only by the occasional examples that he observes of gross dishonesty among officeholders, but also by the frequent manifestation of a low order of intelligence and competence among them. The people who represent him in various public offices are sometimes not as smart as the people whom he employs. He wouldn't want them around his company, and it disturbs him that this is true, but again, at first, he consoles himself with the familiar "they" complex.

He doesn't see why "they" don't get better men to run for office, and once more the small voice begins to assert itself. He wonders what he would do in the company if one of his bright young men suddenly decided to run for the legislature, and knows in his heart that should that happen he ought to give that young man every encouragement that he can, including saving a good job for him when he comes back. And when at long last he finds a candidate whom he likes deeply, he senses that the election of that man to office is worth great sacrifices on his own part, and that the election of a right and

Continued on page 76

LOUIS C. WILLIAMS PHOTOGRAPH



Whether the scene is Washington, D. C., or Nashville, Indiana, there will be men gathering to discuss the problems and events that have a bearing on their immediate situation. It is in his own community that the executive begins his apprenticeship—the discovery of his relationship to his employees, neighbors, friends, competitors, associates, elected representatives, and the countless others who make up his world.



Rôle-playing, which puts the sales trainee in a mock sales situation, is one of the key techniques now being used in many sales training programs. In the second year of the hard sell, training specialists are shifting emphasis from inspirational programs, dependence on ponderous sales manuals, and lecturers to large groups. According to some trainers . . .

"Don't Do It Yourself" is the new sales training trend

JAMES K. BLAKE
Marketing Editor

IN MANY COMPANIES sales training is wasted because sales managers over-emphasize one training phase to the detriment of the others. They rely on one technique to accomplish too much. They teach salesmanship in a way they did not learn it themselves.

The results fit roughly into three recognizable categories—the dancing girl school, the Chautauqua circuit approach, and the "technology, it's wonderful and ours is the best" school.

The dancing girl or Powers model school of

sales training is a fancy production. A large group of trainees are sitting in a theater-like room. On stage is the sales manager, a scantily-garbed model, and the newest piece of the company's equipment. Overhead spotlights play on all three. As the sales executive comments on the competitive advantages of the machine, the attractive model points to their location on the equipment. Later there are inspirational speeches.

The Chautauqua circuit approach is more conservative. In essence, it is little more than speech-

making. Executives from every part of the company—production, quality control, credit department, sales, advertising, engineering, and staff—talk, talk, talk. Between speeches, the men are supposed to be studying their manuals.

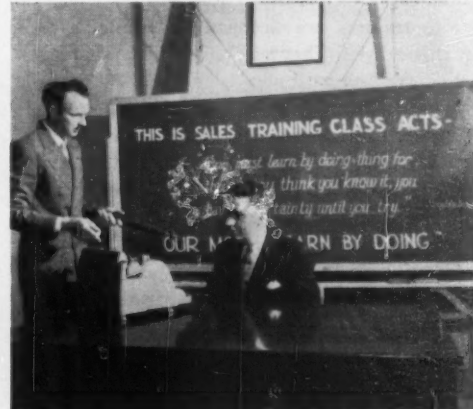
The "technology, it's wonderful and ours is the best" school goes overboard for product training of a sort. The budding salesmen are herded through the plant, each phase of production is painstakingly explained to them. In industrial selling, this "training" may take three



Sales Drill, during which an instructor (as in Pet Milk's program above) fires questions at new salesmen, shows level of learning, builds habit.



Group Problem Solving, where trainees are guided by instructor's questions to the answers, is good substitute for learning by experience.



Product Demonstration by RemRand trainee before critical class takes place of instructor showing how. It's the "doing" that counts.



Lectures by Instructors and Executives are no longer the entire story in a training session. It's only second training stage. First, motivate; second, show; third, trainee performs; fourth, checkup and correct. Few firms use proper sequence and emphasis.

or four days, or weeks, or even up to a year.

These three with varying degrees of emphasis make up a typical sales training package. What's wrong with them? What do they have in common?

1. They reflect the viewpoint that sales trainees are passive receptacles. All you have to do is take the cork out and fill them up.

2. They substitute "props" for motivation. Because some sessions are slick entertainment and the men stay awake, trainers gull themselves into thinking the salesmen are learning something; rather, they are being distracted.

3. Product familiarity by itself is meaningless. That week at the factory must be translated into demonstrations with a dollar sign at the close.

4. Much of the speech-making represents little more than ego-gratification on the part of the speaker. That portion of a speech's content which shows the men selling principles is good training in elementals, but how efficient is it alone? One recent study suggests that only 25 per cent of the men in a class will be able to write a summary of what a speaker said with any reasonable degree of accuracy!

5. The trainees are not actively doing anything themselves. They are being told what to do; they are being shown what to do, but, as individuals, they spend most of their training time watching and listening. Management personnel, by and large staunch advocates of the learn-by-doing school, do all of the work themselves.

6. There is no check on the efficiency of training. How much have the men absorbed of the basic product points, demonstration, and closing techniques? Too many sales training courses have no testing built into them. Men are released for selling who vary widely in their degree of competence, and it doesn't show up until the branch manager checks call reports.

7. The sales trainees are treated as though they are assembly line models, cut from identi-

cal molds. Actually, to maximize the learning process, men must be motivated to respond and every man has his own unique set of motivations. A trainer must know his trainees as individuals.

8. There is no training follow-up. Frequently, liaison between trainers and branch managers who assume responsibility for the salesman is tenuous or non-existent. The many personality traits, weaknesses, and strengths of the man as a salesman which unfold before instructors are not passed along to the man's supervisor with suggestions for correction and development.

To show how companies are avoiding these pitfalls and to illustrate the deepening trend toward learning by doing, the editors chose three companies with different sales problems. The A. B. Dick Company sells office equipment and supplies through dealers and distributor salesmen. The Pet Milk Company sells fast-moving consumer products through retail outlets. Remington Rand sells office equipment and supplies through its own field staff.

In many respects, A. B. Dick has the toughest problem of all. It has no direct control over the salesmen who sell its products. Moreover, most of the company's sales training is conducted through courses mailed to the dealer who hires the new sales hand. Since these courses take from nine to twelve months to complete, the major problem is motivating the salesman to finish the course.

Every lesson in the various product courses is designed to make the salesman participate, to have him apply what is being shown. On product demonstrations, for instance, the lesson uses the standard step-by-step development. After he has completed the lesson, however, he then takes a "test." He must demonstrate it to his employer-distributor who fills out a rating form checklist which shows the man's proficiency from his opener to his close.

A typical week's assignment teaches the trainee

the basics of one phase of selling which he will apply during the following week. The instructions for the course on the wholesale market, for example, read: "Study the manual carefully. Then pick out three User and three Non-User wholesalers to call on during the next week. Plan your calls carefully. . . . Make use of the suggestions and techniques you'll find in the manual. When you have made your calls and completed the report form enclosed, have your manager approve it and mail it to us. When received the next assignment will be mailed." Thus, by turning much of the control element over to the distributor who hires and pays the salesman, A. B. Dick Company is able to transform a reading course into a learn-by-doing program with these three key training features: (a) telling and showing; (b) doing; (c) checking and correcting.

Pet Milk sales trainers place similar accent on training by doing, with special emphasis on individual instruction. For a short period after a salesman is hired a sales trainer demonstrates and briefs him on selling and policy manuals and portfolios. Then, with a sales trainer, he starts to call on retail grocers. In the store, the trainer's job is to observe the trainee and to rescue him if he gets into deep water. Outside the store, they hold a "curb conference" where the man's performance is analyzed and suggestions made. When the man seems prepared to go on his own, he is turned loose for about a month. Then he and the trainer meet again for a short period of duo-selling, after which he is on his own again. The next training session takes place about a month later in the local sales office or in a hotel room. Basically, this is a refresher and drill session during which the trainer helps the salesman improve his selling techniques, corrects any poor habits that have developed and brushes up on any other aspects of selling that need strengthening.

After approximately six months with Pet Milk, most of which has been spent in supervised selling, he is tapped for what is actually a finishing school at the company's main office in St. Louis. By now, he knows more than the rudiments of his craft. He has been motivated or primed to learn the fine points of selling. He is eager to improve. As important, the central school training people know from the man's reports the type of training he needs.

The central training school takes all that the man has learned from his trainer and from experience up to that point and puts it into logical perspective. He knows, for instance, how to meet standard objections. The central school trainers go into detail on *why* the objections are raised and *how* to handle them successfully. After this orderly groundwork is laid, the salesmen begin to drill. Hour after hour, objections are posed and met. Habits begun in field training are solidified here. Then, when the man returns to his territory after completing this finishing school course, his trainer again and finally checks to see how much he learned.

Remington Rand's National Sales Training Institute operates with a similar philosophy. Lectures, manuals, classroom discussion, visual aids are all used only as preliminary techniques to motivate the salesman and implant basic concepts faster and deeper. Even during the "giving" phase of training, however, the trainees are "doing" and participating. There is, for instance, a review session each morning. The group is warned that one man will be selected at random to review material covered the previous day, using his notes. This serves two purposes; it keeps the class on its toes and it shows the instructor what points did not get across.

A group review technique is also used, during which only non-volunteers are quizzed. This shows the instructor what is approximately the lowest level of learning in the class.

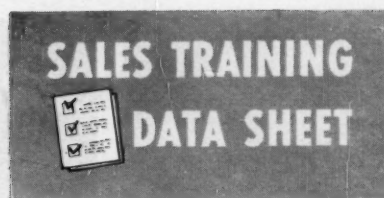
One of the most advanced concepts at the school is what its director calls "diagnostic training." In essence, this means knowing and motivating the salesman as an individual—the element most frequently ignored in sales training programs. If you don't know the man, you don't know what he is buying or rejecting. You have only haphazard control of his future sales development because you don't know his problems and drives—in other words, his "hot buttons."

At the RemRand school this is accomplished by personal interviewing. Each instructor is assigned a group of men and during the first week each man has a preliminary interview. The job of the instructor is to draw out the man. His instructions read, "Don't criticize—at this time, just listen." Guided by questions, the salesman appraises his selling progress, his obstacles, and his favorable factors. As weaknesses are revealed, questioning explores them to find what the trainee thinks are the causes. Sales interest is appraised, "What do you really hope to get out of your relationship with the company?"

As the interview begins to wind up, the instructor and the trainee work out mutually a plan of self-correction on all the selling weaknesses which the trainee himself has discovered. At this stage interview instructions read, "Avoid like the plague being superior." The instructor also begins to bring the man around to positive attitudes on aspects of selling where he has shown negative reactions.

Throughout the trainee's stay at the school, the instructor builds a file of personal observations. These relate to personality ("loses temper easily"), attitude, maturity, industry ("late in finishing assignments"), all of which tend to suggest what might happen when the man returns to his territory. This file developing through daily, intimate contact becomes the basis for a report to his branch manager.

Toward the end of the training period, all of the instructors meet to discuss the group and to rate each trainee. Then, during the final interview with the salesman, all negative as well as positive aspects of his development are discussed with him and specific recommendations are made for his development.



Key Points for Sales Trainers

Principles used by members of the National Society of Sales Training Directors are so basic they could serve as a guide for any program. Here are some of them:

"WHY"

1. Assume that the student is not interested unless he stands to gain from learning.
2. Repeat the "why" to revive interest.
3. Here are several "why" reasons:
 - a. More money or what money will buy.
 - b. Promotion.
 - c. Thrill of achievement.
 - d. Pride of a professional.
 - e. Standing with fellow men.
4. Stop frequently to fan "why" reasons into a flame of interest to learn.

"EXPERIENCE"

1. Experience is the only teacher.
 - a. Man learns through the five senses.
 - b. Understanding is limited to experience.
2. When topics are in series, avoid later topics until foundation is laid. One thing at a time.
3. Don't take learning for granted—check as you go. Ask questions to check.
4. The best check of learning is to have him explain or demonstrate to you. It's not really his until he can use it.

"PATIENCE"

1. Learning is a slow process at best.
2. The instructor must submerge any tendency to be impatient with slow learning.
 - a. Most students won't confess lack of learning—so encourage those who will.
 - b. A teacher needs the spotlight of demonstrated non-learning to pace himself.
3. Impatience with any student may alienate others of the class toward the instructor.
4. Avoid criticism of any student before the group for any reason. Arrange a private conference for such criticism.

"REPETITION AND DRILL"

One week from to-day a trainee should be expected to remember only 10 per cent of what you tell him to-day.

1. Repetition deepens the mental groove.
2. Verbal and skill drill can make the mental groove deep enough to become habit.
3. Visuals to supplement the spoken word help to raise retention over 10 per cent.
4. Note-taking helps to improve retention. Make note-taking easier by suggesting major headings, and summarize from time to time.

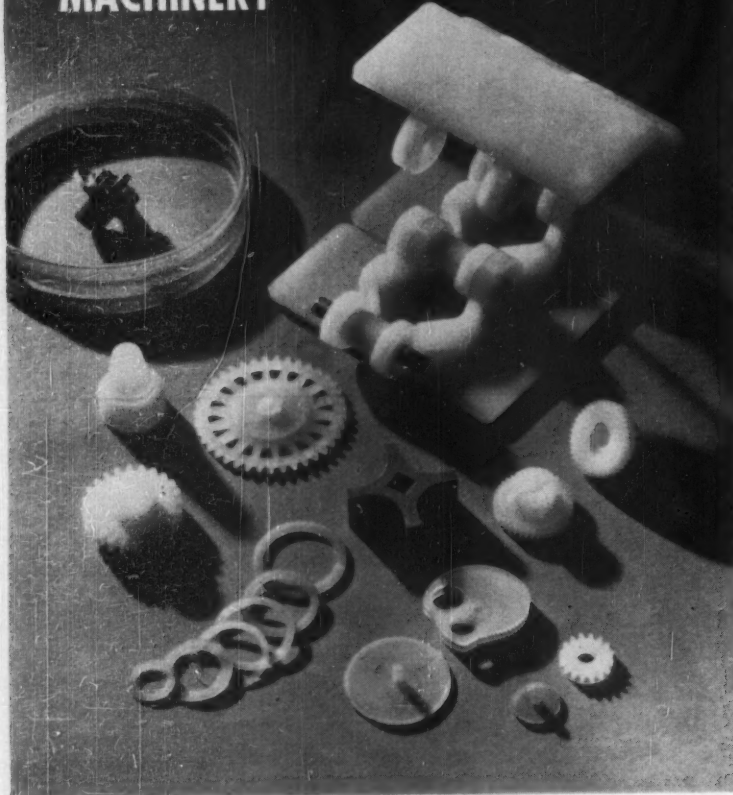
"USE"

1. Ideas or skills must be used to be retained.
2. All training not used is wasted.
 - a. The first use is most difficult.
 - b. The first use is likely to be incorrect and needs to be corrected.
 - c. Frequent use develops habit.
 - d. Use is the law of life—use an arm and it grows strong—keep it idle and it shrinks. The same with the mind.
3. Utilize trainee "wants" to encourage him to put training into use.
4. Many a salesman has lost the most effective sales-making practise he ever knew because he forgot to use it.
 - a. Salesmen will let best sales methods slip by unless stimulated to use them daily.

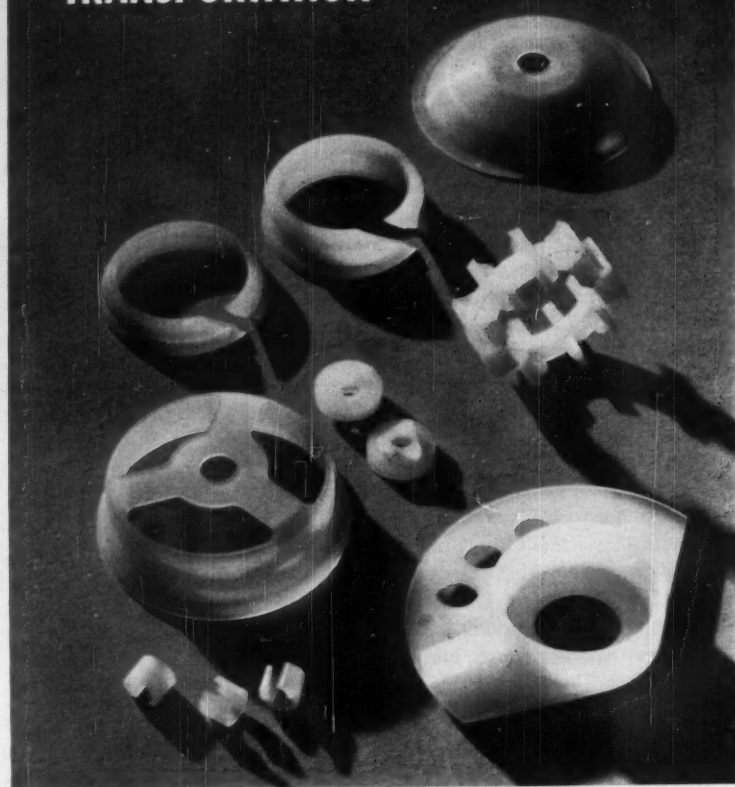
"GROWTH"

1. You strive to develop men's potentials.
 - a. Develop men—not teach a technique.
 - b. Seek definite growth each day.
 - c. Send trainee to branch with poise, self-confidence, and professional attitude.
2. Men must learn by doing. For rapid growth, keep men working.
 - a. To make a good talker, encourage expression of ideas.
 - b. Strong impression must precede vigorous expression.
 - c. Writing ideas in notebook helps impress them on mind.
 - d. Practise new experience.
 - e. Practise in handling new equipment gives growth in skill.
 - f. Skill means growth in confidence.
 - g. Growth in confidence makes for success.
 - h. Nothing breeds self-confidence and ability faster than self-activity fostered by recognition.
3. Encourage progress at all times by accentuating the growth you observe.
 - a. Exude the feeling of progress being accomplished.
 - b. Use the sandwich method in corrective measures. First a top layer of praise, then a filling of correction or showing a better way to accomplish an objective; and finally a bottom layer of more praise for a job well done.
 - c. Praise freely for progress.

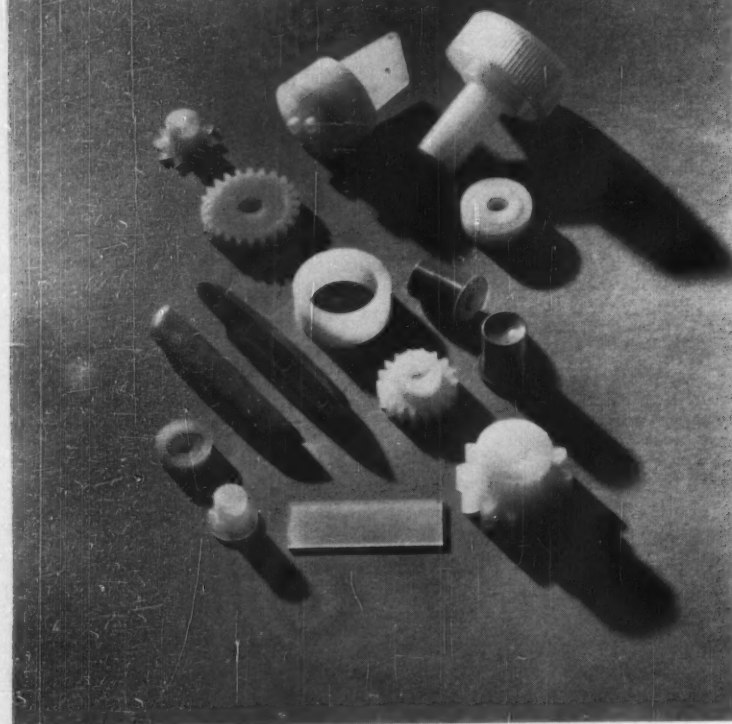
MACHINERY



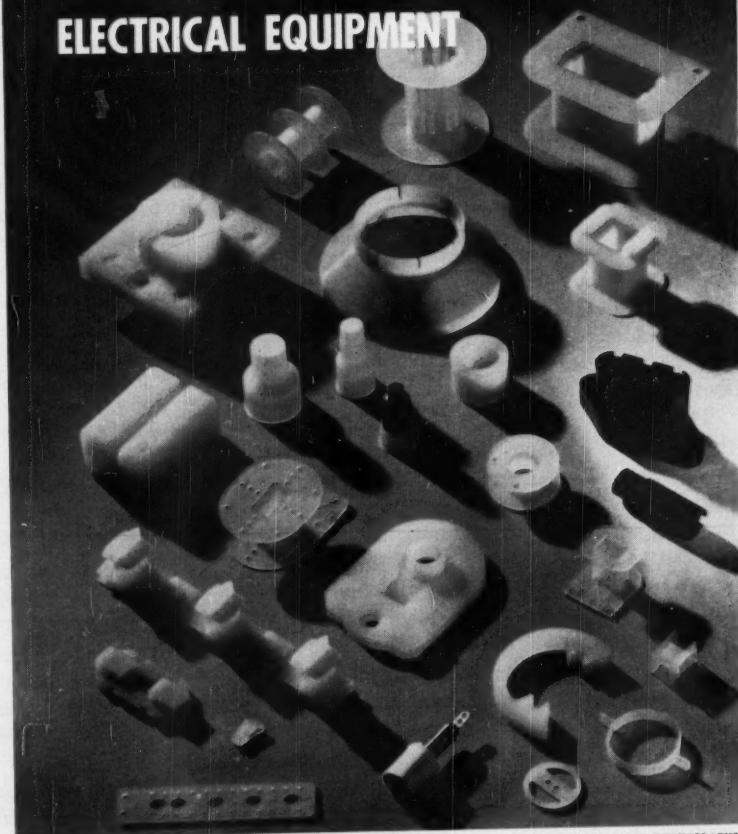
TRANSPORTATION



HOME APPLIANCES and OFFICE EQUIPMENT



ELECTRICAL EQUIPMENT



F. M. DEMAREST PHOTOGRAPHS

Look what they're doing with **NYLON**

Molded and extruded nylon are bringing new products, better components for many industries. Here's how you can put them to work.

ANNESTA R. GARDNER
Industrial Editor

GLAMOUR has nothing to do with it. Molded nylon is winning a place in industry strictly on the basis of its engineering qualities. It hasn't moved as fast as its sister material, nylon fiber. But molded nylon is now snaring jobs from steel, brass, and other plastics; and it's paving brand-new roads of its own.

Molded-nylon parts are bringing wear resistance, strength, noiseless operation, resistance to chemical attack, and dimensional stability to everything from refrigerators to fishing reels.

Nylon gears, for example, are used in cameras, powered chain-saws, automobile speedometers, textile machinery, pressure gages, and coin meters. In many cases, the nylon not only outlasts metal by a factor of five or more, but also permits design simplification. A five-part metal gear assembly, for instance, was turned into a single nylon molding—with a saving of 60 per cent on production costs.

Another good example of design simplification with nylon is the *Air-Push* windshield-wiper motor pictured on page 45. Taking advantage of the resin's moldability, it has been possible to hold the number of major parts to less than a dozen—a mere fraction of the number that would be needed for an ordinary motor.

Even when there is no change in basic design, nylon's moldability and dimensional stability can often help to bring costs down.

W. J. Tyrrell, Jr., of Molding Specialists, Inc., describes a *Linotype* star wheel that was converted from a linen-fiber laminate to nylon. Here, the fact that nylon can be injection molded, and a square hole in the center can be held to a tolerance of 0.001 inch in the molding process, has eliminated a broaching operation and

increased productivity to a point where costs are down 70 per cent.

Savings like this are important because nylon is not a cheap material. The molding resin still costs about \$1.45 a pound. But the long-term trend is down; and, even at current prices, when full advantage is taken of nylon's abilities, it may well be the least expensive choice in the long run.

It's also true that a little nylon can often go a long way toward solving tough engineering problems. Dexter Machine Products, for instance, uses a thin nylon insert in its precision gears to eliminate backlash. The nylon, sandwiched between steel plates, grows slightly after cutting, increasing gear-tooth thickness just enough to hold the gear in position without adding noticeably to the torque.

Where to Use It

In general, nylon rates consideration wherever flexibility-plus-strength is needed; where soaps, salt water, lactic acid, photographic solutions, and other bad actors pose corrosion problems; and where parts must operate without lubrication or at temperatures above the boiling point of water.

The barrel of a pen, for example, must resist perspiration, ink, and plenty of rough treatment. That's why Parker Pen Company chose nylon for the barrel of its high-quality *Jotter* ball pen. It used the same material for the ratchet of the actuating mechanism (see photograph, page 45) because it is wear-resistant and will operate without lubrication.

Resistance to water, oil, dust, and sand, plus strength and light weight were key factors in the selection of nylon by Sprague Devices, Inc., for the *Air-Push* windshield-wiper motor. The motor, designed for use on heavy-duty trucks, is tough and durable; yet it weighs only ten ounces, is two inches in diameter and about seven inches long.

Nylon's stamina also explains its use in such washing-machine components as hinges and push-buttons. Not many materials can take constant dunking in hot soapy water—and come up with face smiling.

Nylon's toughness and resistance to food acids bring it two interesting jobs: conveyor belting

for dairies, canneries, and distilleries; and babies' drinking tumblers.

Fenco, Inc., which makes the nylon, slot-type conveyor belting (upper left photograph on opposite page) tried a good many materials in its search for one that would withstand both milk and water, operate without lubrication, and resist jolts and bumps. Nylon not only meets these specifications, but also reduces operating costs. Less power is needed because nylon is light in weight and has a low coefficient of friction.

H. J. Heinz Company, which uses the baby tumbler (photograph, page 45) as a self-liquidating premium says the nylon model is bringing a flood of requests, though it's necessary to charge twice as much for it as for the polystyrene model which was originally offered. As Avalon Products, Inc., the molder, points out, nylon resists breakage and permits heat sterilization.

In fact, nylon's ability to maintain its properties over a wide range of temperatures is one of its most important qualities. It will stand operating temperatures as high as 250° fahrenheit, and can be used for such parts as pilot-light windows on deep-fat fryers—where other plastics might soften, and glass might easily break. At the same time, nylon's ability to retain its strength and flexibility at sub-zero temperatures brings many opportunities in refrigeration equipment.


This unusual combination of properties is opening a good many new markets and new roads in product design.

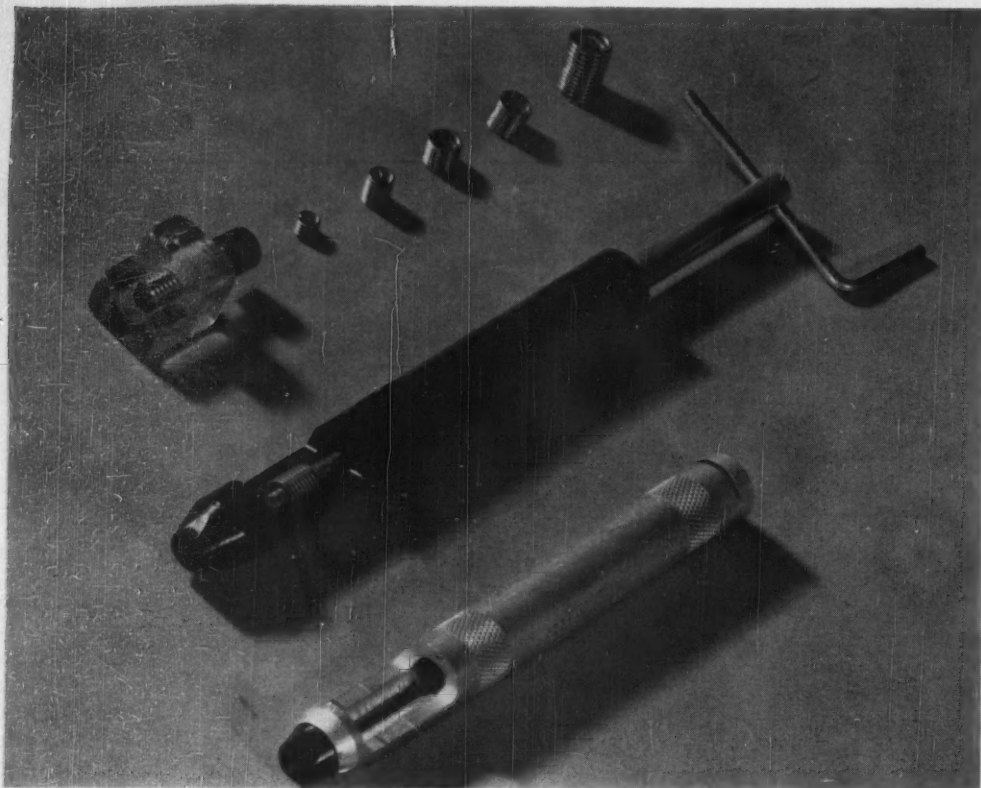
The cut-and-fit, self-gripping grommet pictured on page 44 owes its invention to nylon. Max Famely of Nylon Molding Corporation, who designed the device, points out that nylon offers just the right combination of strength, moldability, and flexibility.

How It Expands Sales

Shakeproof Division of Illinois Tool Works reports that development of nylon fasteners has broadened its market considerably. Nylon's strength and resistance to cracking opens many structural applications that could not be touched with fasteners made of other plastics.

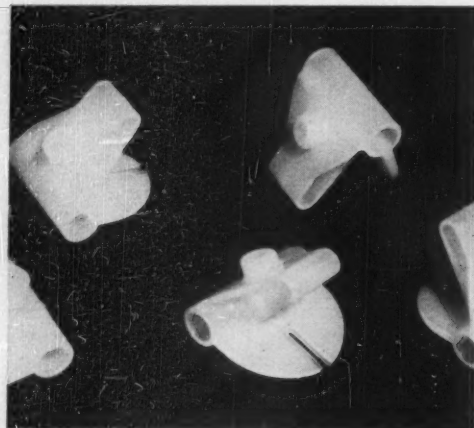
At Bell Telephone Laboratories, nylon is being evaluated for a wide variety of communications-equipment parts—bearings, message register

 Nylon is engineered into gears, cams, bushings, bearing races, coil forms, knobs, polishing belts, and conveyors for food and chemical processing, communications and photographic equipment, machine tools, automatic clothes washers, printing presses, automotive and aircraft parts. The molded items shown here are produced by Cosmo Plastics, Inc., DuBois Plastics Products, Molding Specialists, Inc., Nylon Molding Corporation, and Plastic Molded Parts. Hartford Special Machinery makes the polishing belt (upper left) from extruded material.



F. M. DEMAREST PHOTOGRAPHS

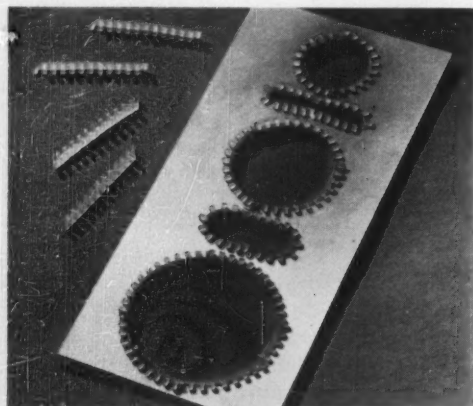
Toughness and dimensional stability make nylon a fine choice for Heli-Coil inserting tool. Nylon cuts cost, too, since MSI can mold tool shank in one piece, eliminate much machining, assembly.



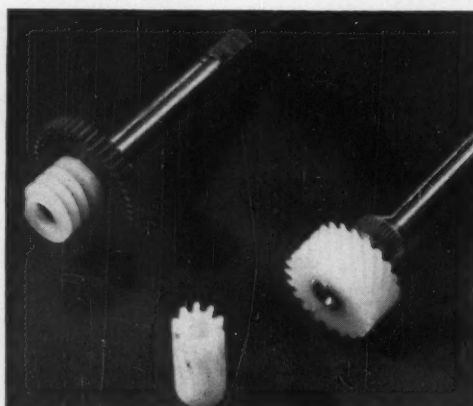
Thread guides for textile machinery benefit from nylon's wear resistance, light weight, moldability. Nylon Molded Products makes these.



Hot water doesn't hurt nylon shower-head, and hard water deposits don't stick to it. Rainbow Plastics molds this item of Du Pont nylon resin.



Nylon brings new solutions to old problems. Nylon Molding Corporation devised this toothed grommet which can be molded in strips and cut to size, takes a firm grip when installed.



Extruded shapes share molded nylon's good qualities, are readily machined, can be used for prototypes of molded parts. Polymer Corporation supplies extruded rod, bar, strip, tubing.

wheels, drive gears, cams and pawls, and the like. In addition to nylon's many other good qualities, Bell Labs notes, its light weight permits faster operation of equipment, and its non-glare surface makes items like message register wheels easier to read.

Nylon's flexibility and elasticity are put to work with good effect in a new speedometer design by AC Spark Plug Division of General Motors Corporation. R. O. Helgeby of AC notes that the flexibility of the nylon parts makes them self-aligning, helping to compensate for any slight warpage; and the elasticity of the material makes it easier to fit washers to shafts. Even more important: after the equivalent of 300,000 miles of operation the speedometer's nylon worm-gear showed no significant wear.

The fact that nylon can often take the place of metal in gears, cams, bushings, and other machine parts does not mean it can be handled exactly like metal in every application.

Different in Some Ways

Nylon does not dissipate heat the way metals do. There have been cases in which nylon bearings failed, apparently because the nylon was too thick to get rid of the heat that was generated. Using a very thin molded-nylon lining inside a steel shell seems to solve the problem. Nylacore Corporation, which is making nylon-lined bearings of this type, says they will operate continuously at high speeds generally without requiring any coolant.

Another case in which nylon's thermal properties almost lost it a good job was in a revolving-door hinge. The first models worked fine, but someone decided to check service life with an accelerated test. The nylon softened and flowed out of shape. Why? The test involved continuous motion, allowing no time for heat dissipation—a condition never encountered in actual use. When a more realistic test was devised, the nylon came through with flying colors.

Even when nylon is to replace other plastics, it's important to recognize that this material has a personality of its own. It should not be forced into a mold fashioned for another material.

Nylon parts can be made in dies designed for other thermoplastics; but the result is never very satisfactory. Nylon melts at a higher temperature and flows faster than most of them; and its shrinkage factor is different.

As W. C. Wall, supervisor of nylon product development for Du Pont points out, processability is one of nylon's great assets. If production quantities are not high enough to support the cost of injection molding, parts can readily be machined from extruded stock (it cuts much like yellow brass) or stamped from sheet and strips. Some users report, in fact, that thin-section parts which lend themselves to stamping can often be produced more rapidly and economically that way than by molding.

In working with molded or extruded nylon, it's important to recognize that these really are new materials. Though nylon molding resin

was first introduced in 1941, significant commercial use dates only from 1948.

A great deal remains to be learned about engineering and fabrication. Up to now, indeed, almost every user has been a pioneer, and each has had to discover for himself the optimum manufacturing techniques.

Until very recently, too, there was only one major source of nylon in this country: Du Pont. Now, Algemene Kunstzijde Unie N. V., the parent organization of American Enka, is importing and selling Holland-made nylon resin under the trade name, *Akulon*; Hercules Powder Company is bringing some in for market tests; Allied Chemical & Dye Corporation is putting the finishing touches on a brand-new plant in Virginia; and at least one other American company has a nylon resin plant under construction.

The European nylon (known as *caprolactam nylon*, or *nylon 6*) and the resins to be made by the new producers are somewhat different from the standard Du Pont material (*nylon 66*)—exactly how different remains to be seen. Little can be said about comparative advantages and limitations until they are tested competitively in specific applications. The vast majority of nylon products made in this country so far have been of Du Pont's nylon 66, and it is this type (now sold under the trade name *Zytel*) on which the property and performance statements made here are based.

There Are Many Kinds

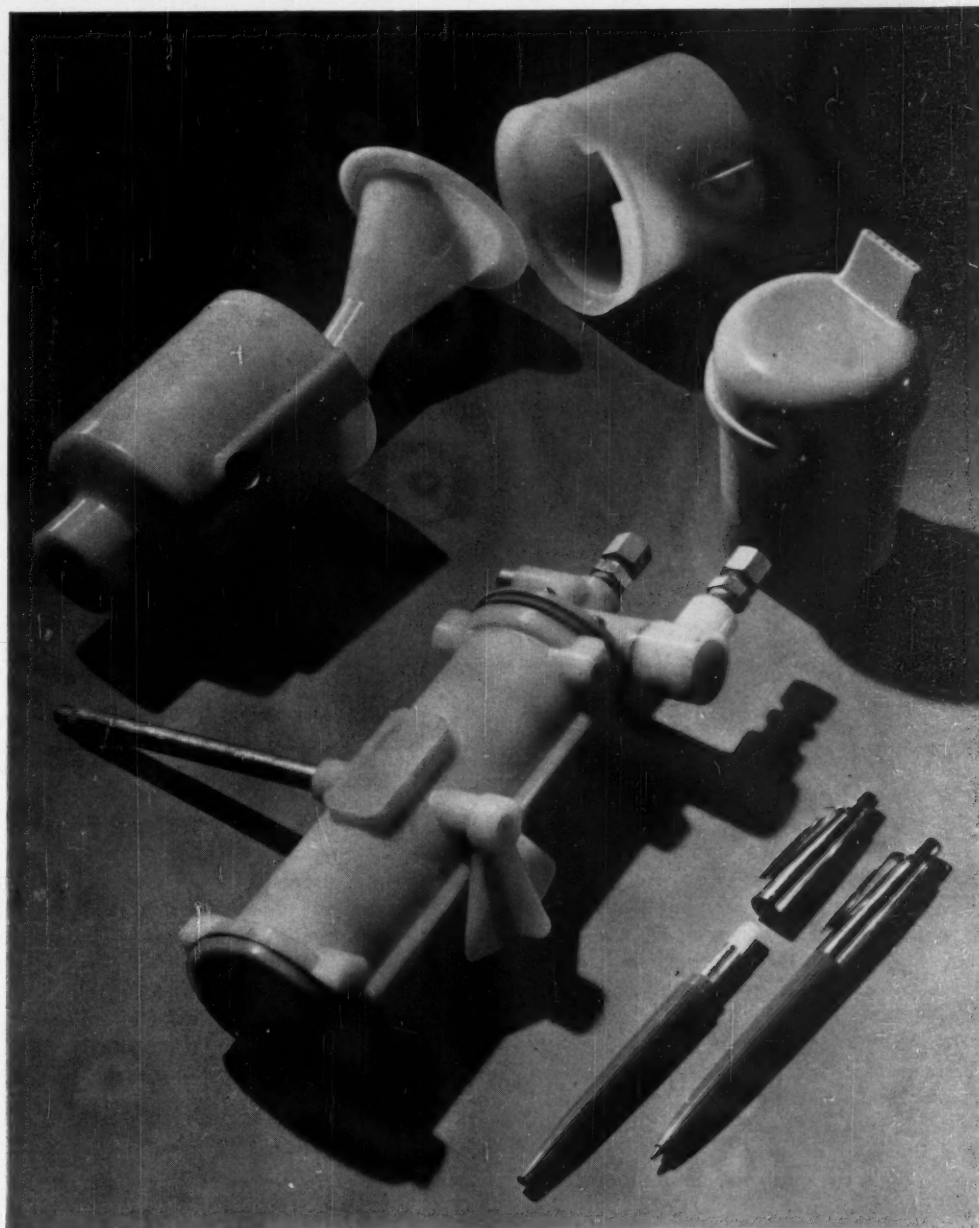
Yet, even this type of nylon represents not one material but many. Its properties can be varied a good deal, not only by changing the basic chemicals that are used in making it, and the way they are processed, but also by post-processing treatments.

Solvent resistance, for instance, can be altered by changing the method of resin production; and such mechanical properties as flexural strength are affected by control of the molding process and by heat treatment after molding.

On the other hand, electron beam treatments, which seem to hold great promise for increasing polyethylene's heat resistance and hardness (see June 1954, page 44), appear to have relatively little effect on nylon. Research along these lines is continuing, however.

Summing up, nylon has many advantages: warmth to the touch, resistance to chemical attack, quiet operation, and electrical insulation. It is non-toxic, tasteless, and odorless. It can be injection molded, extruded, and machined. Its heat resistance is outstanding; and, though it will burn, it does not support combustion. It is self-extinguishing when the flame is removed.

Like most plastics, nylon is a fairly good electrical insulator. It is not generally recommended for very high-frequency, low-loss applications. However, it does retain its dielectric as well as its physical properties over a wide temperature range, and so may offer definite advantages for high-temperature electrical service.



Resistance to gasoline, solvents, food acids, inks, recommends nylon for products like these. Pictured (clockwise from upper left) are: NMC gas control unit, Heinz premium tumbler, Parker ball pen, Sprague motor. Pen has nylon barrel and ratchet; motor is all nylon except for shaft, fasteners.

Nylon is a tough material, and abrasion-resistant. Valve components have withstood pressures as high as 3,000 p.s.i., and have gone through more than 600 million cycles of operation without showing signs of wear.

In many cases, nylon parts will operate continuously at high speeds without lubrication. As James F. Wyllie of Engineered Nylon Products points out, this fact is bringing the material a widening circle of jobs in high-speed textile machinery, bottling equipment, and the like, where oils and greases can not be used for fear of product contamination.

Even when product contamination is not a serious problem, nylon parts are being used just to eliminate the nuisance of periodic lubrication. Ransburg Electro-Coating Corporation puts nylon bearings on the reciprocating cylinders of its new disc atomizer for electrostatic spray painting primarily for this reason.

In general, nylon shows excellent resistance to chemicals. It is, however, attacked by concentrated mineral acids, and it does have a tendency to absorb oils, greases, and dyes. This is an advantage as well as a disadvantage, though.

When engineering requirements are high, colored molding resins are generally not recommended. Pigmentation increases nylon's resistance to ultraviolet light, but may in some cases tend to lower other physical and electrical properties. However, the fact that nylon takes up dyes makes it easy to color parts after molding. Buck Electrical Manufacturing Company, for instance, gives its *Nycap* preassembled pigtail wire-splicing connectors a distinctive red top without lowering their electrical efficiency, just by dipping them in *Tintex* before assembly.

Can qualities like these improve your product or plant equipment? If so—look what they're doing with nylon.

A Short-Cut to Fact-Finding



DEVANEY PHOTOGRAPH

SCIENTIFIC SAMPLING IS A PHRASE THAT CONJURES UP VISIONS OF HIGHLY COMPLEX MATHEMATICAL COMPUTATIONS AND VAGUE TECHNICAL TERMINOLOGY. BUT MANY EXECUTIVES ARE FINDING THAT THESE FEARS ARE UNJUSTIFIED. INSTEAD, THEY ARE LEARNING THAT THIS STATISTICAL METHOD IS A POWERFUL TOOL FOR GETTING DATA QUICKLY AND ECONOMICALLY. HERE IS A DISCUSSION IN LAYMAN'S LANGUAGE ON WHAT IT IS AND HOW IT WORKS.

B. J. MANDEL

*Chief of the Statistics Branch
Bureau of Old-Age and Survivors Insurance
U. S. Department of Health, Education, and Welfare*

SOURCES of information for management have become so numerous and of such large magnitude that sampling has become a "natural" method of obtaining factual information from them. By sampling, information can be obtained more economically, quickly, and very often more accurately than by a survey of the complete file or "universe."

A broad appreciation of the main sampling principles would lead to more intelligent communication between administrator and statistician, and would result in greater reliance on sampling, with the ultimate realization of more scientific management.

One frustration to a better appreciation of the elements of sampling by business managers has been the technical language encountered in the field. Then, too, there are a few new basic principles and theories to contend with—and anything new and unfamiliar isn't easy to learn without some effort. This article attempts to explain in layman's language some of the highlights of sampling: What it is; how it works; wherein comes its power; how accurate are its results; and what risks are taken by using them.

Because of its widespread use in business, government, industry, social life, and, in fact, practically every field of human endeavor, everyone now "seems" to know what sampling is. Generally, the layman describes sampling as selecting a part from an entire universe and drawing conclusions about the universe from a study of the selected part. However, often overlooked in defining sampling are a few very important words—"scientific selection of a part." Unless the sample is selected scientifically, that is, by relying on the *laws of chance*, the advantages of using sampling are limited. In fact, non-scientific sampling often leads to conclusions with unwarranted confidence.

The basic criterion in selecting a scientific sample from a given universe is that we must assure in advance of sampling that each item or unit is free to enter the sample by chance. This means that the method of selecting the sample must be such that it enables us to know what chance each item has of its being selected. This assurance, that the principle of known chance or probability has been complied with, is



DEVANEY PHOTOGRAPH

A familiar scene in many cities and suburbs these days is the interviewer. From willing subjects he gets information that will be projected onto a much larger canvas, giving answers about likes and dislikes, trends and desires, and other pertinent information of value to manufacturer and distributor.

the heart of scientific sampling. It is not always necessary each item have an equal chance of selection. It may be desirable to select the sample in such a way that more important items have a better chance of selection than others. The important point is that the probability of selection of every item must be known in advance of picking the sample.

This element of known probability in sampling can be understood more fully by an illustration. When we have a universe, let us say, of 1,000 different companies, each of which we consider to be of equal importance in connection with a given survey, probability sampling would ordinarily be such that each company would have as good a chance of being included in the sample as any other, namely, one in 1,000. However, if in this universe of 1,000 companies we consider some to be more important than others, because, for example, they are of very large size, our sample selection would ordinarily be such that the more important units are assigned a better chance of selection than the less important ones. How much more, or how much less, of a chance some units should have of being selected depends upon the extent of importance we assign to the appropriate units. There are many different ways of assigning probabilities of selection to various items in a universe, and elaborate probability sample designs have been developed by sampling specialists.

To avoid complexities here we shall confine our discussion to the oft-occurring situation where each item in the universe is considered to be of equal importance and where each item can be as readily selected as any other item. For such universes, each item has to be given an equal chance of selection.

There are many ways of selecting scientific
Continued on page 56

HOW CORPORATIONS AID EDUCATION

As company profits begin to replace wealth of individuals in supporting colleges

and universities, new ways of giving multiply; new problems face management men.

ALFRED G. LARKE
Employer Relations Editor

CORPORATION contributions to colleges and universities have increased greatly in number and amount in the last couple of years. Of equal importance to the schools, students, and society as a whole, the character of the gifts has been changing, also.

Less of the corporate contribution has been for local institutions or research and training purposes that return direct benefits to the donor company. More has been given with broad social aims—for the general support of educational institutions, for the aid of liberal arts schools, for the maintenance of America's dual system of higher education—privately-conducted, gift-supported universities and colleges alongside the tax-supported institutions, which have had less difficulty obtaining funds. Scarcely a week has gone by in the last year without the announcement of some new corporate donor, a new method of allocating contributions, new mechanisms for distributing funds, new devices through which small companies may give as wisely as large, new kinds of contributions from the companies that have always given in the past, but for more limited purposes.

Corporate contributions to education are no new thing, of course, but the door to companies' playing a fuller citizenship rôle in this respect was opened wider in 1953. In that year, the New Jersey courts, ruling in a stockholder's suit, upheld the right of a corporation to contribute its funds to an educational institution within reasonable limits. Since the court's decision was based on common law, as well as New Jersey statutes, the ruling has been taken to apply elsewhere, as well. Companies which previously had doubts about their authority to do so, found the way clear to give money.

The ruling and the consequent increase in industrial gifts have come at an opportune time. Not only have rising costs thrown a great many private colleges and universities into the red, but a greatly increased crop of college-age students will confront the schools in the next fifteen years. Meanwhile, the proportion of youths 18 to 21 who attend college is constantly increasing. It was 3.6 per cent in the college year 1899-1900, 11 per cent in 1929-1930, 26.5 per cent in 1953-1954.

One measure of the problems that face the

Little companies have been big givers

Revenue laws exempt from taxation any corporate charitable contributions up to 5 per cent of net taxable income. Only small companies have approached that limit of tax-exempt giving. Figures below, for 1951, are for all charitable donations including education.

ASSET CLASS	CONTRIBUTIONS	
	AMOUNT	% NET TAXABLE INCOME
Under \$50,000.....	\$ 3,764,000	4.39
50,000 under 100,000.....	5,292,000	1.25
100,000 under 250,000.....	16,112,000	1.30
250,000 under 500,000.....	19,083,000	1.35
500,000 under 1,000,000.....	23,706,000	1.32
1,000,000 under 5,000,000.....	68,460,000	1.29
5,000,000 under 10,000,000.....	28,545,000	1.13
10,000,000 under 50,000,000.....	66,177,000	0.92
50,000,000 under 100,000,000.....	23,135,000	0.71
100,000,000 and over.....	86,345,000	0.43

Source: Russell Sage Foundation from U. S. Treasury Data

schools is a comparison of births in 1937 and 1953. In the earlier year, 2,200,000 were born in this country; they are of college age this year. In 1953, there were 3,900,000 births; these children will be of college age in 1971.

Students' tuition has been raised to meet increased costs, but it has not been raised as fast as costs. Educators fear to raise it more: each boost may deprive some worthy students of an opportunity to get higher education.

Faculty pay has been increased, but not as much as that of most other professions, or of skilled and unskilled workers. More alumni are contributing, and average alumni contributions are greater; but the increases do not equal the increased need of the institutions.

The need of the institutions has become so great, and the variety of problems involved in corporate contributions so complex, that more than 50 top executives of the nation's biggest corporations met for two days last month at the call of the Columbia University Graduate School of Business and the Council for Financial Aid to Education, to discuss the situation.

They reported almost universal acceptance of the conviction that business and industry may and should exercise "corporate citizenship" in the liberal support of education. Banks, public utilities, insurance companies and other organizations under government regulation are the only corporations which still sometimes feel themselves limited in giving to such causes.

The executives reported stockholder objections almost non-existent—Philip D. Reed, chairman of the board, General Electric Company, said only one stockholder offered criticism of the company's million-dollar program for 1955-1956. Hundreds have written in praise.

There was agreement, also, on extending gifts to a greater diversity of colleges, with fewer or no strings attached to their use.

Corporations gave about \$70 million to institutions of higher learning in the academic year 1953-1954; they will be called upon for a substantial part of the \$5.5 billion these schools will need in the next ten years, it was held.

The Council for Financial Aid to Education released, at the same time, its findings in sur-

Small schools unite to make giving easy

One of the newest and most promising channels for grants from business and industry is the state or regional association of colleges and universities. There are 32 state and three regional groups, obtaining funds for 401 educational institutions.

The new mechanism for getting educators and business men together developed from the decision of two Indiana college presidents in 1948 to combine solicitation efforts. They were joined by others and, in 1952, established the first state association.

The groups serve several purposes. They afford national corporations a means of distributing grants equitably among the numerous smaller institutions. They are primarily of help to the non-tax-supported liberal arts colleges and universities, which need aid most. They "protect" the donor from pressure of otherwise neglected schools. They are designed, however, to complement, not replace, normal patterns of giving.

To 1954, they received for allocation among member institutions nearly \$6 million.

How a state association works may be shown by the brief history of the Wisconsin Foundation of Independent Colleges, Inc., one of the newer groups. Representing sixteen colleges with some 9,000 students, it received a record-breaking \$94,267 in its first year. The Wisconsin association was organized by the colleges, but at the prompting of the Wisconsin Manufacturers' Association, rather than of educators in search of funds. It makes no solicitations itself: its initial appeal was made by members of the WMA. It also has the support of the Wisconsin State Chamber of Commerce, Wisconsin Farm Bureau Federation, and local chambers of commerce and manufacturers' associations.

Robert A. Ewens, executive vice president of the Wisconsin Manufacturers' Association, last Fall organized meetings of members in two dozen or more Wisconsin cities. A local WMA bigwig introduced the subject of industrial contributions at the meeting—laying chief stress on the necessity of preserving independent colleges as a source of training in the concept of liberty and of healthy competition for tax-supported institutions. A college president from nearby explained the schools' plight. The WMA man wound up with a plea for pledges. A local WMA committee followed up with calls in some areas.

In the first year, contributions ranged from \$100 to \$25,000. "The Wisconsin Foundation," says the Rev. E. J. O'Donnell, president of the Foundation and of Marquette University, "was initiated not as a one-way street to give the colleges the support they need, but as a two-way street that leads from industry to the colleges and back to industry. It emerged slowly from a conviction that a program which gave close attention to the needs and capabilities of both education and business could not but help both."

veys of 367 corporations and of 753 colleges, universities, and professional and technological schools, as well as in relevant governmental and other statistics.

Among the findings:

- The dollar amount of corporate contributions to all health, welfare, religious, educational and similar causes has increased fairly steadily, from \$30 million in 1936 to \$399 million (estimated) in 1952.

- Corporate contributions to all such charitable causes, expressed as a percentage of net taxable income, has also risen fairly steadily from 0.39 in 1936 to 1.03 in 1952. There has been no obvious direct connection with existence or non-existence of excess profits taxes.

- Small companies give a much larger share of their net taxable income than do large ones (see page 47 for 1951 figures). In fact, the smallest companies approach the tax-exempt maximum of 5 per cent.

- Larger companies are now beginning to give at a higher rate, however. Figures for 1953 from 367 companies showed gifts to all causes ranging

from 2.87 per cent of net taxable income for the smallest concerns to 1.41 per cent for those with more than 100,000 employees.

- Gifts for education alone ranged from .66 per cent to .36 per cent.

- Many corporations prefer to support higher education through pool funds—the funds make allocations to the colleges and universities. Such an arrangement relieves the donor of pressure from schools he might not have contributed to if he had made the allotments himself; it may also result in schools getting donations more nearly in the form they want them in.

Of the corporations answering the Council's questionnaire, 63.5 per cent now give or favor giving to the United Negro College Fund; 49.5 per cent to the National Fund for Medical Education; 40.5 per cent to state and regional college funds (see story in box above); 33 per cent would favor a general national education fund if one existed. Not listed are other groups that solicit funds for education, such as the American Fund for Psychiatry.

- Companies most often aid the private, four-

year, accredited colleges, and universities and technological schools (70 per cent, 73 per cent, 73 per cent, respectively), and tax-supported universities and junior colleges less (37 per cent, 15 per cent). Similar ratios hold for the intentions of corporations that have not yet made contributions.

- One out of six corporations chooses colleges and universities as beneficiaries without regard to their location. But, in general, the trend is still to favor those closest to the company in one way or another:

Of 366 companies making grants for general maintenance, 10 per cent favor schools whose graduates are in its employ; 10 per cent a college in the company's principal market area; 16 per cent "according to best judgment regardless of location"; 19 per cent in the company's home state; 45 per cent in the company community.

- Educational institutions have apparently sold corporations on their need for unrestricted funds and funds for plant. Of the 367 companies answering, 77 per cent gave money for buildings, 62 per cent for other physical properties, 30 per cent for endowment and equipment, 75 per cent for unrestricted use, 69 per cent for schools and departments.

- Of the same companies, 47 per cent offer "open" scholarships for talented students; 35 per cent give aid for employees; 35 per cent award scholarships for employees' children; 52 per cent grant graduate fellowships.

- There is a trend towards establishing foundations to administer contributions. Thirty-six per cent of the Council's respondents now give through a foundation they have set up themselves, rather than directly; 14 per cent have considered a foundation and decided against it; 10 per cent plan one or are in process of setting one up; 9 per cent have a special corporate fund for the purpose.

An interesting exposition of the pros and cons of a charitable foundation is cited by the Council from a National Industrial Conference Board survey in 1954.

Pro-foundation: It provides tax advantages which reduce the cost of the company contribution; it permits a company to stabilize its donations despite swings in the business cycle; it helps establish programmed giving; it facilitates a more comprehensive donations policy; it serves as a source of good will.

Con: There is some loss of control of funds; there is risk in securing and retaining tax-exempt status; there is less participation by local management; foundation disbursements exclude company memberships; the number of requests for contributions increases; stockholders may raise objections.

The Council's report also includes summaries of the widely varied programs of E. I. du Pont de Nemours & Company, General Electric Company, The Maytag Company Foundation, and the United States Steel Corporation and United States Steel Foundation, Inc.

Continued on page 52

it pays to plan in plastics molded by General American

**new one-step process
extrusion and vacuum forming
cuts costs—saves time**

Refrigerator inner-door liners by the thousands, television-cabinet fronts, dresser drawers, air conditioner fronts, housings for lighting fixtures . . . these are just a few of the many parts that can be produced in one step at lower cost through General American's continuous operation extrusion and vacuum forming.

This General American process speeds production, permits lower tooling costs, more rapid tooling and quicker changeover. With General American doing your molding, you have no capital investment.

Can these advantages help you? It will pay you to find out. Investigate General American's unduplicated facilities for plastics moldings. Write for details.

**PLASTICS
DIVISION**

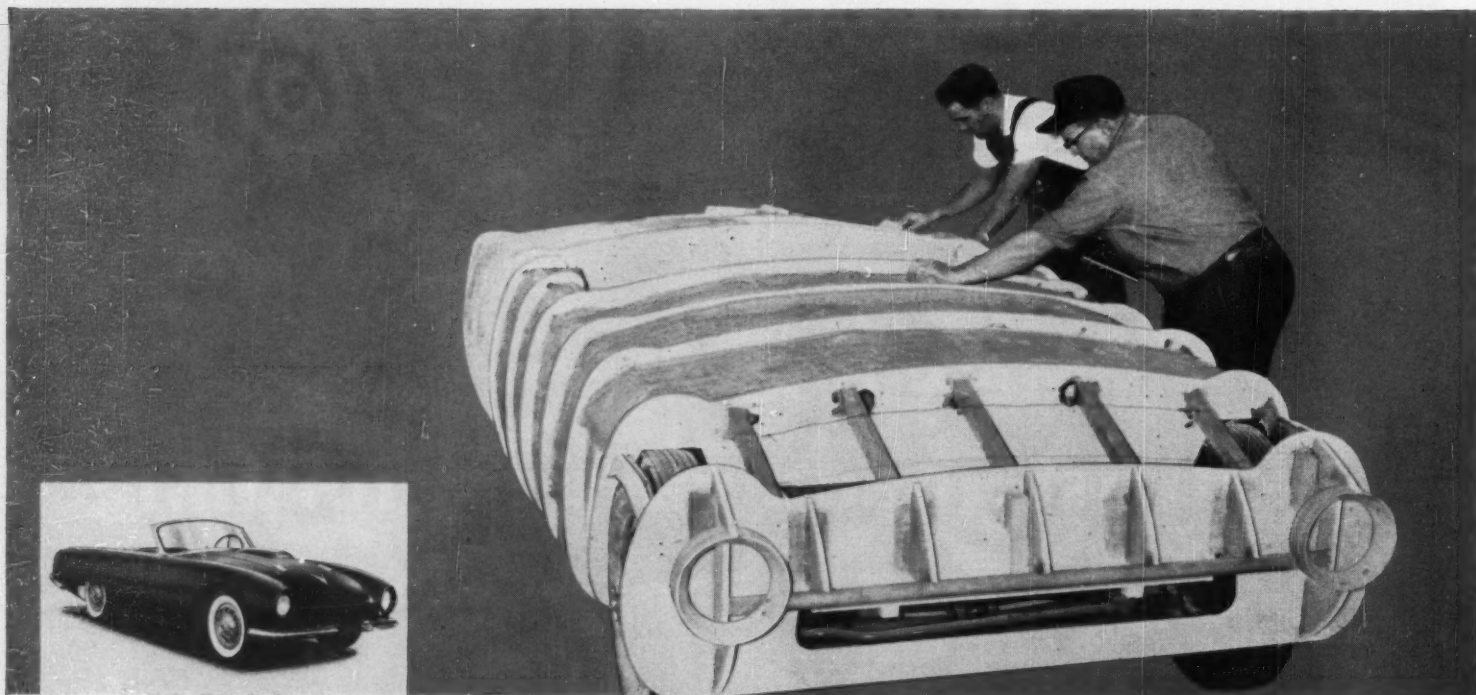


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FROM BLUEPRINT TO FINISHED CAR IN RECORD TIME WITH HYDROCAL PLASTER TOOLING

UNITED STATES GYPSUM

Pioneers in Ideas for Industry

Today, more than ever, *time means money!* That's why industry looks to the research leadership of United States Gypsum for ideas and materials to speed up production and hold down costs. One idea alone worked a near miracle for Triplex Industries, manufacturers of the new "Chicagoan" plastic sports car. Through the use of HYDROCAL* gypsum cement for tooling, Triplex was able to complete a plaster working model of the "Chicagoan" in just four weeks—about one-fifth of the time estimated for the construction of a mahogany model.

Just 56 days before the finished "Chicagoan" was to go on display, it was still in the blueprint stage. The ease, economy and speed with which HYDROCAL gypsum cement was applied to the metal and wood templates is bound to influence future body design in the sports car field. And this is only one of the many uses industry is finding for this revolutionary new method of tooling.

Through the use of EXPAND-X expanded metal, Molla Inc. has developed designs of unusual beauty in metal furniture, while cutting fabricating and assembly costs. This all-in-one-piece expanded metal has virtually 1,001 uses—grilles, guards, enclosures, shelving, grating and design motifs are just a few. Investigate EXPAND-X for your open-mesh requirements.

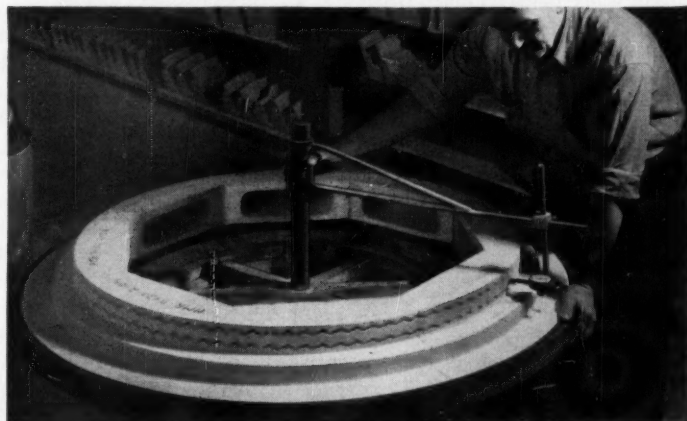
Recent improvements in plaster casting techniques have resulted in new uses for non-ferrous metal castings. For example, the J. C. Heintz company and other manufacturers of tire molding equipment now cast their most intricate molds in HYDROPERM* plaster. A HYDROPERM core is faster to pour; permits the reproduction of finer and more precise details; provides smoother surface finishes than sand castings.

*T.M. Reg. U.S. Pat. Off.—HYDROCAL and HYDROPERM are super-strength gypsum cements manufactured by U. S. Gypsum Co.



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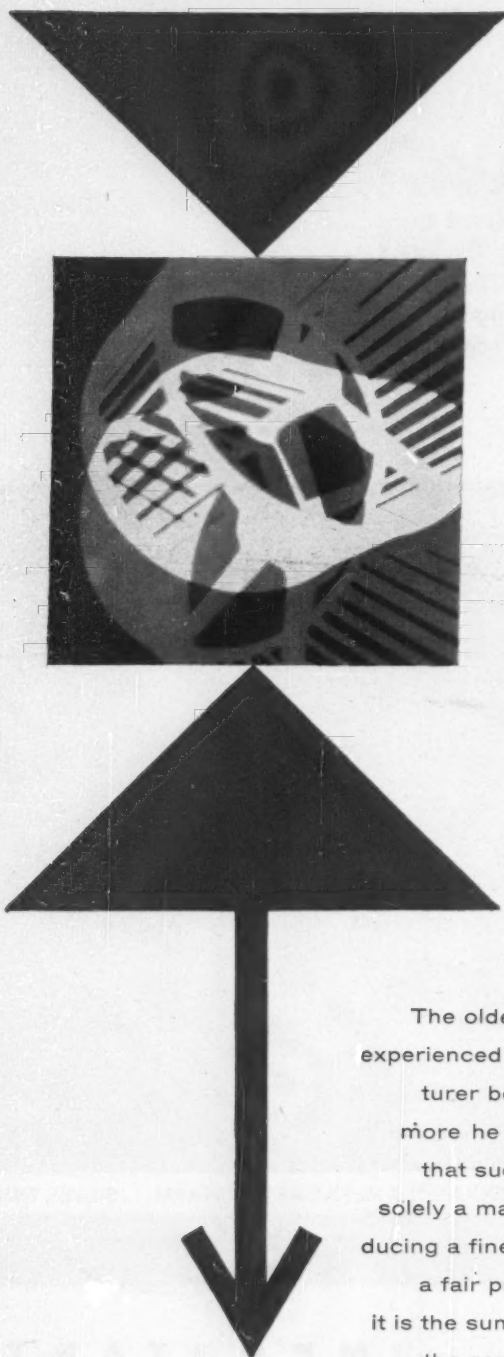
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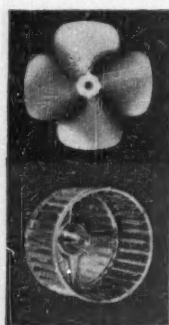
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The older and more experienced a manufacturer becomes, the more he appreciates that success is not solely a matter of producing a fine product at a fair price. Rather it is the sum total of all the services, great and small, which he renders to his customers day by day and throughout the years.



**THE
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TORRINGTON, CONNECTICUT
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The Council reports that most companies have a continuing contribution committee, rather than making ad hoc donations. The committee, consisting of a small group of executives and representatives of the directors, typically conducts a preliminary study of educational needs in relation to the company's direct interests and to the broad contributions made by American institutions of higher learning to the economy and society.

The Council, which was established by business men rather than educators, and which neither raises nor distributes funds itself, publishes a variety of booklets and other material that would aid such a corporate committee and provides a bibliography of other material on the various phases of corporate contributions.

Where Can the Money Go?

What kind of grants do the schools need? In what form would they prefer to receive money? When the company committee gets around to considering these questions, it is likely to find that its preferences are at odds with those of the educational institutions.

Although the trend, especially among the leading large companies, is shifting towards making unrestricted or less restricted grants, which the institutions may use as their needs dictate, the Council study published this year indicates that there is a wide variance between the kind of money the schools get and the kind they desire.

An earlier Council report, based on a limited number of schools and corporate donors, shows school and contributors' preferences diametrically opposite in some cases, but the variance is not quite that great, the current study, based on much larger samples, has shown.

Current corporate practice favors the various kinds of contributions in this order:

1. Contributions for operating costs.
2. Capital funds (for buildings, endowments, etc.).
3. Special services.
4. Student aid.

The schools, on the other hand, list their preferences in this order:

1. Unrestricted funds.
2. Capital funds for building.
3. Capital funds for endowment.
4. Funds for increasing salaries of

faculty members.

5. Scholarship funds.

6. Funds for new equipment.

7. Graduate fellowships.

The Council's April, 1955, survey report covers 753 educational institutions, but does not give an overall listing of their preferences. It reports separately, however, on the needs of nine types of institutions: non-denominational, church-related but non-Catholic, and Catholic liberal arts colleges, privately supported; non-denominational, church-related but non-Catholic, and Catholic universities, privately supported; professional and technological schools; tax-supported colleges, and tax-supported universities.

Tax-supported colleges and Catholic liberal arts colleges need funds for building more than any other kind of grant; the rest prefer unrestricted contributions. Funds for salary increases rank third or fourth on the want-lists of all nine types of institutions; scholarship funds rank near bottom.

Supplementary Scholarships

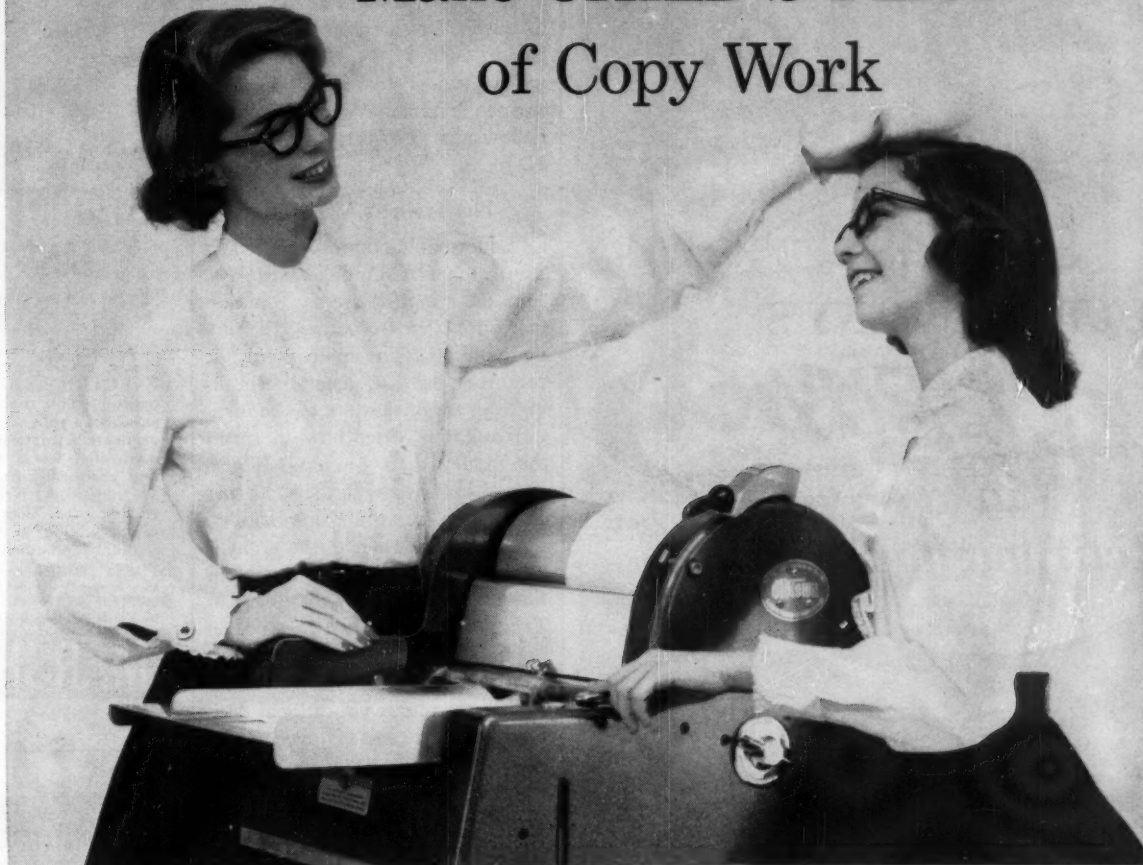
With the cost of educating a student exceeding what he or his scholarship pay in tuition, a great increase in scholarships could conceivably bankrupt a college, if other funds were not made available to eke out the cost. Some corporations have taken cognizance of this problem by establishing supplemental grants for the school to go with each scholarship.

The National Association of Manufacturers, in a booklet, *Our Colleges and Universities and Their Financial Support*, says that a number of companies grant \$400 to \$600 a year to the institution as a supplement, for each year a scholarship is in effect.

The NAM booklet, which covers a great many of the aspects mentioned above, also advises supplemental grants in the case of graduate fellowships because the schools lose money on them, too.

Noting that research grants have been a favored form of industrial contribution, the NAM says that as a business operation they are wholly proper, but as an aid to education, they fall short. For one reason, research projects are frequently conducted at a loss by the institutions; for another, they usually deal with applied rather than basic research. Also, such grants tend to emphasize

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almost exclusively the physical sciences to the neglect of the humanities and the social sciences.

An attempt to redress the latter neglect, incidentally, is being made by such organizations as the Foundation for Research on Human Behavior, Ann Arbor, Mich., which solicits grants for social sciences, and the National Woodrow Wilson Fellowship Program, Princeton, N. J.

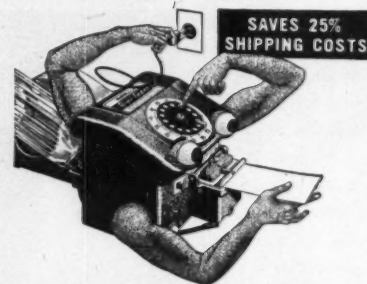
No Strings Wanted

"Educators and informed laymen," the NAM publication says, "are unanimous in their opinion that unrestricted gifts are far more desirable . . . The main point," it continues, "is that, generally speaking, the administrators of the institution know better how to spend the money than you do." It also cites as an advantage the facts that charges of "corporate domination" cannot be made where the grant is unrestricted, and quotes Benjamin Fairless, Chairman of the Board of Trustees of the United States Steel Foundation, Inc.:

"The Foundation has no desire to share in purely educational decisions or to become involved in the customary provinces of the colleges and universities."

There are many means for the corporation, especially the smaller one, to give some direction to the use made of its grants and yet allow the educational institutions unlimited discretion. By contributing to the state or regional college funds (see page 48), for example, the grant will be channeled primarily to private liberal arts colleges, which make up the bulk of the groups benefiting from such funds. Or a gift through one of the specialized groups may channel the funds to medicine, social sciences, or the like, yet leave the final use up to the beneficiary institutions.

Differences in accounting and in concepts of "deficit" and "surplus" make it difficult to gather exact figures on the financial status of the various kinds of educational institutions, the Council for Financial Aid to Education says. But it did establish that some church-supported and non-denominational universities appear to be the most needy of the nine classifications of institutions it queried. Only the tax-supported institutions were preponderantly in the black.



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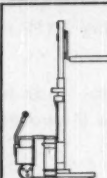
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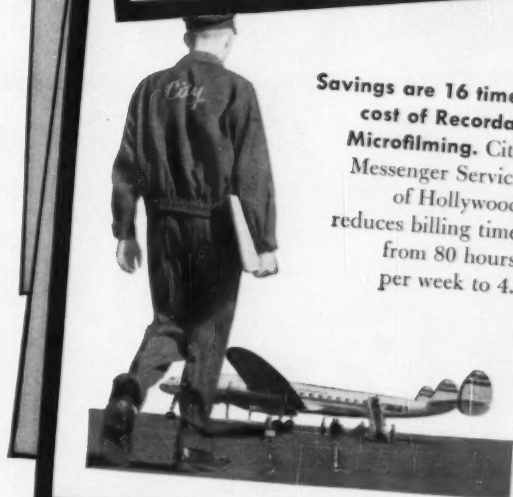
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FACT-FINDING

Continued from page 46

samples from universes with items of equal importance. One method is called *simple random sampling*, another is *systematic random sampling*, and a third is *stratified random sampling*.

Simple random sampling. Suppose a restaurant has assembled a complete file of punched meal tickets for customers, each showing by a perforation of a number the amount that was paid for a meal during a given year. How would we select a simple random sample of, say, 250 tickets from the file of 250,000 in order to estimate the average amount spent for a meal? All the tickets may be thrown into a carton and mixed well. Then we would shut our eyes and select 250 tickets from the carton. By mixing the carton we intend to randomize the file so as to assure that each item has an equal chance of selection. However, "mixing well" does not always randomize the file.

A superior way of random sampling is the technique, *random numbers*. By this method we assign each of the 250,000 tickets a number in succession starting with any number we please. We then select the sample of 250 tickets by reference to a list of published random numbers. The first 250 random numbers in the list bearing numbers assigned to the 250,000 tickets would become our sample.

Methods of sampling, where the entire universe is treated as a single entity, and where each item in the universe is independently given an equal chance of selection, are known as *simple random sampling*. These methods rely entirely on the laws of chance in a known way to give an accurate picture of the universe. Selection must be controlled to assure that no item has a better chance of being chosen than any other item.

Systematic random sampling. Suppose the 250,000 tickets are filed in a box. We can obtain a sample of 250 tickets by picking every 1,000th from a random starting point. The skip-interval of 1,000 is derived by dividing 250,000 by 250, the number desired for the sample. The random starting point is fixed by selecting any random number between 1 and 1,000 from a table of random numbers and



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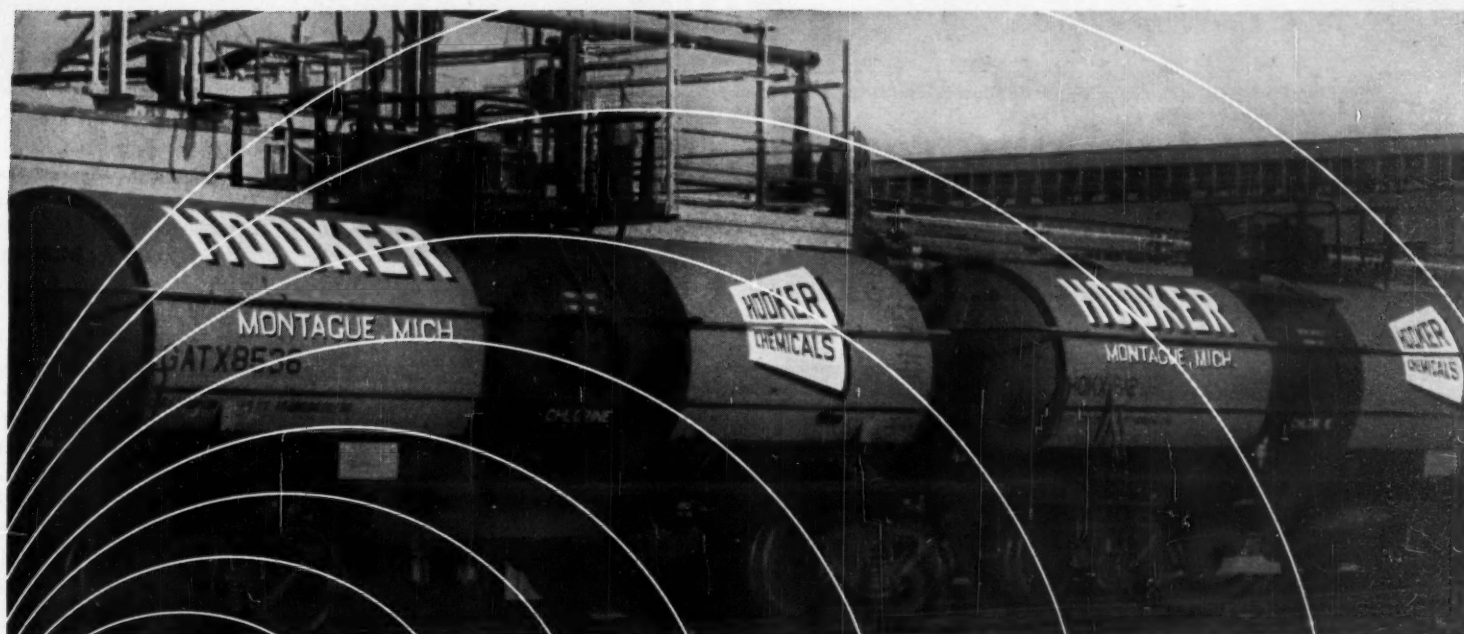
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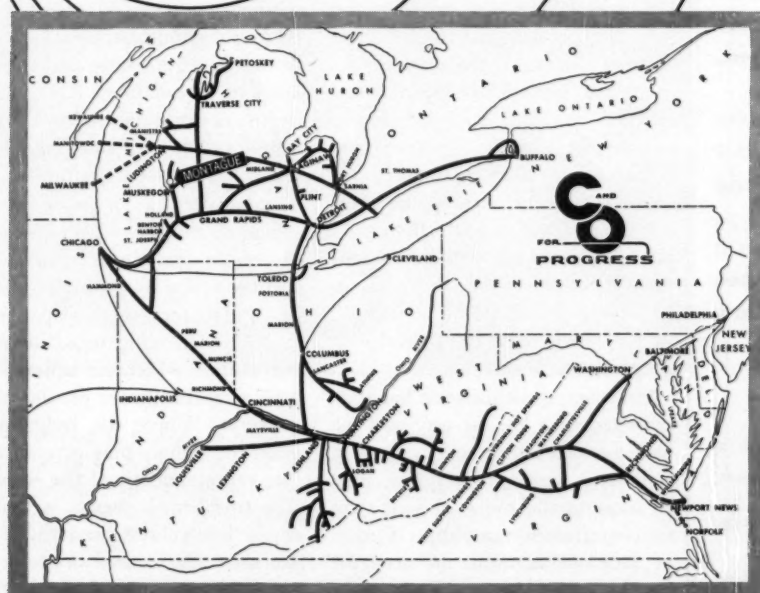
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It all started when the Hooker Electrochemical Company, came looking for a strategic site for a new midwest plant. Hooker had a number of factors in mind, of course. Transportation. Water. Power. Labor conditions.

But the primary requirement was an adequate supply of the basic raw material — salt. Hooker wanted to locate on top of a layer at least 50 feet thick. They hoped to find 100 feet. Here at Montague they found two beds with a total thickness of 430 feet. Six hundred fifty million tons right under the plant. Enough for a thousand years.

Now duPont and Union Carbide are moving in next door. Altogether there are over 31 million dollars worth of new chemical plants built or on the drawing boards in Montague and probably more in the offing.

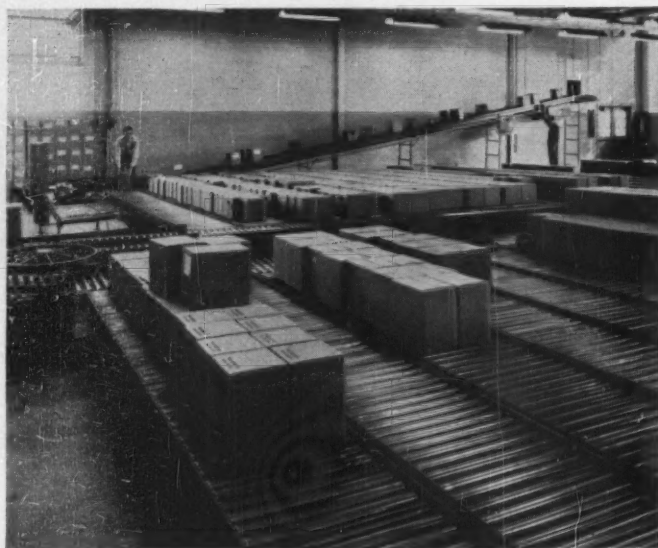
Somewhere there is a site as ideal for your plant as Montague proved to be for Hooker. And it is our business to help you find it.



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counting off as many tickets from the beginning of the box as the random number indicates. This method is often found to be more practical than simple random sampling.

The method yields a scientific sample because each ticket in the universe has as good a chance of being chosen for the sample as any other one. Once the first item is chosen the design for the entire sample is established, since every 1,000th item from the starting point is chosen. This method of sampling is usually preferred over simple random sampling, not only for its greater practicability but also because it tends to overcome occasional failures of pure chance to give a representative picture of the universe. However, it is subject to a possible distortion against which we must guard, as follows:

Systematic sampling may sometimes yield results which contain greater errors than simple random sampling if the items in the universe are arranged in some kind of a repetitive pattern. Because of the similarity of the characteristics of the systematically selected items, the systematic sample might fail to be typical of the universe. One way of overcoming the problem is to split the universe into segments and then choose independent random starting points for each segment.

In simple random sampling we rely entirely on chance to give us an accurate picture of the universe. In systematic sampling somewhat less reliance is placed on pure chance because the selection of the sample is “forced” through every nook and corner of the universe if the skip-interval is small enough. If there is no special way in which the universe has been arranged, a systematic sample will usually yield results of no greater accuracy than a simple random sample.

However, if the universe has been arranged in a special way and we have avoided falling in a cycle, then systematic random sampling may be substantially more efficient than simple random sampling. It may, in fact, yield results of accuracy equal to stratified sampling.

Generally the method of sampling which gives greatest accuracy is the one in which we can “fix” things, to maximize the chance of getting a representative sample of the universe, by a method called *stratified random sampling*.

Suppose the items in the population to be sampled differ widely. If it is possible to identify groups of items within it which have fairly similar characteristics and which are related to the characteristic we wish to measure, we can usually get a truer picture of the universe by selecting a random sample from each known group separately. Each separate group is called a stratum.

Basic Points

Two important points should be noted about stratified sampling.

1. Stratified sampling offers no advantages in precision over the other two methods unless the method of stratification divides the characteristic we are estimating into fairly similar segments closely related to the characteristic being estimated. For example, stratification of the universe of 250,000 meal tickets into breakfast, lunch, and dinner would improve the sample, while stratification by customers’ hair color probably would not.

2. Items from each stratum must be selected by the principles of chance.

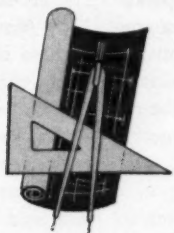
In addition to the above three types of probability samples, there are a few other variations of scientific sampling, such as *cluster samples*, where bunches of items are selected by probability methods; *sequential samples*, where small successive random samples are taken from a given universe and accumulated to give data with a specified degree of accuracy, and *multi-stage sampling*, where sub-samples are selected from larger samples.

Judgment sampling. Samples which do not rely on the principles of chance are usually called judgment samples. The sampler uses his best judgment, based on past experience, in selecting those items for the sample which he believes will give a representative picture of the universe. Where the judgment is good the sample may give an accurate representation of the universe. The problem, however, is that we rarely know how good the results are since the method does not rely on the known probability laws for the selection of items.

Quota sampling. One type of judgment sampling is known as quota sampling. This is a stratified type. Different groups are set aside for sampling. This is equivalent to stratification and is a good feature

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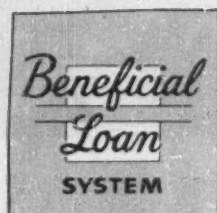


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"The vital part of every custom molding job," says Jim Previti, "is proper mold construction by a designer who knows materials and equipment characteristics." Previti, who now heads mold development and technical service at Pyro Plastics, qualified himself working as mold technician, set-up man, foreman and shift supervisor. Backed by 15 years' experience, he has set up maximum operating conditions for custom molding of plastic parts for air conditioners, electronic units, automotive equipment, clocks, radios and packages.

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- more families served than ever before
- further expansion of world's largest system of loan offices
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Beneficial loans in 1954 continued to provide many families with the extra assistance they needed to overcome temporary financial difficulties, and by so doing helped them maintain their standard of living. These loans, to a large degree, are used to pay bills already incurred, thus aiding the economy at the local level.

The continued expansion of the Beneficial Loan System in 1955 will afford an opportunity for Beneficial loans to help more families in more communities than ever before.

HIGHLIGHTS

	1954	1953
Net Income	\$ 15,197,593	\$ 14,116,311
Net Income per Common Share*	\$1.55	\$1.45
Cash Dividends paid per Common Share*	\$0.96	\$0.96
Amount of Loans Made	\$560,524,214	\$536,616,263
Number of Loans Made	1,729,161	1,666,695
Instalment Notes Receivable	\$345,331,314	\$323,798,894
Number of Offices	863	809

* Adjusted for the recent two and one-half for one stock split.

The information contained herein should be read in conjunction with the financial statements and notes appearing in the 1954 Annual Report to Stockholders. A COPY OF THE REPORT WILL BE FURNISHED UPON REQUEST.

... a *Beneficial* loan is for a beneficial purpose.

Beneficial Loan Corporation

BENEFICIAL BUILDING, WILMINGTON, DELAWARE

Subsidiary Loan Companies: BENEFICIAL FINANCE CO. . . . PERSONAL FINANCE COMPANY
COMMONWEALTH LOAN COMPANY . . . WORKINGMEN'S LOAN ASSOCIATION, INC.

of this method. However, selection of items from within each stratum is usually not on the basis of known probability. In addition, more often than not, the interviewer fills his quota of persons by the easiest way rather than on the basis of probability. Administrative and cost considerations are the main reasons for using this type of non-random sampling, but the fact remains that the reliability of its results is unknown.

Source of Power

Probability sampling derives its power primarily from the laws of probability which are applicable to it. The details of these laws cannot be fully discussed in a short paper. At the risk of over-simplification, the essence of the power may be stated as follows:

1. It enables us to make a precise quantitative statement regarding how closely the sample can be expected to reflect the universe, that is, the sampling error in the estimate.
2. It enables us to state in quantitative terms the risk we run of being wrong with the estimate, after allowing for sampling error.
3. It enables us to determine the

size of sample necessary in order to achieve any desired precision in the estimate.

With non-probability samples we cannot make the above precise calculations.

A further advantage of probability sampling is an intuitive one. If there is no logical basis for selecting the sample items from a universe, it is intuitively reasonable that a random sample is most likely to reproduce the universe. Moreover, experience has shown that the logical rules on which stratified judgment samples are based are often wrong or incomplete, so that even very large samples may fail to reflect the universe adequately. On the other hand, industrial quality control often relies on probability samples of as few as 25, 100, or 300 with excellent results.

Knowing how to design and pick probability samples is only half the story. The other half involves making estimates and calculating the risks assumed in using the estimate. Three steps are involved:

1. *Making the estimate from the sample.* Referring back to our meal-cost problem—suppose that a simple

How to get inside the Billion-Dollar Soft Drink Market

Are you a manufacturer who has *not yet* found the great sales opportunities to be had in the Soft Drink Industry? Here's the inside story:

1. Production and sales of the 5400 bottling plants in the U. S. annually total about a *billion* dollars with employment of almost 100,000 people. Those plants use and buy millions of dollars worth of everything imaginable every year.
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3. Practically every bottling plant will be represented in Miami, Florida, November 14 to 17, at the annual Exposition-Convention in the huge Dinner Key Auditorium.
4. Are your products adaptable to this market of high potentials? If so, you will want to exhibit them at the 1955 industry exposition.

For complete information on available booth space or complimentary tickets of admission to study the exposition's value to your business, write to the industry's national association:

AMERICAN BOTTLERS OF CARBONATED BEVERAGES
1128 Sixteenth Street, N. W., Washington 6, D. C.



random sample of 250 meal tickets has been selected from the universe of 250,000 tickets for the year. We then compute the average cost by conventional statistical methods. This average is our estimate of the true universe average amount spent for a meal.

2. *Measuring chance or sampling error.* It would be as foolish to consider this estimate perfectly accurate as it would be to think that out of every two tosses of a coin we would always get one head and one tail. In sampling we become conscious of errors in data, and that's a good thing, because in complete censuses we often lull ourselves into believing that there is no error. Various types of respondent and processing errors occur in all surveys, and the cost of tracking them down is relatively large.

Respondent and processing errors can be more readily and inexpensively eliminated in relatively small samples. Chance or sampling errors cannot be avoided, but in probability samples they can be measured and controlled.

When a probability sample has been selected, the chance error in

the resulting estimate can be measured because we know, or have a good way of approximating from the sample, the extent of variation among the items in the universe. We also know the size of the sample.

Differing Items

Variability in the universe. If each of the items in the universe has the same value then there is no variability. A sample of but a single item would reproduce the true features. If the items in the universe differ only to a slight extent there couldn't be much error in a small sample. However, if there is a great deal of variability among the items in the universe, the error of estimate from a small sample may be relatively large. For a fixed size of sample, the error increases as the variability in the universe increases.

Size of sample. Errors in estimates from samples can usually be decreased by increasing number of items in the sample. Experience and statistical theory have shown that chance-errors in estimates of population characteristics vary in-

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Says R. M. Putman, Sr., president of

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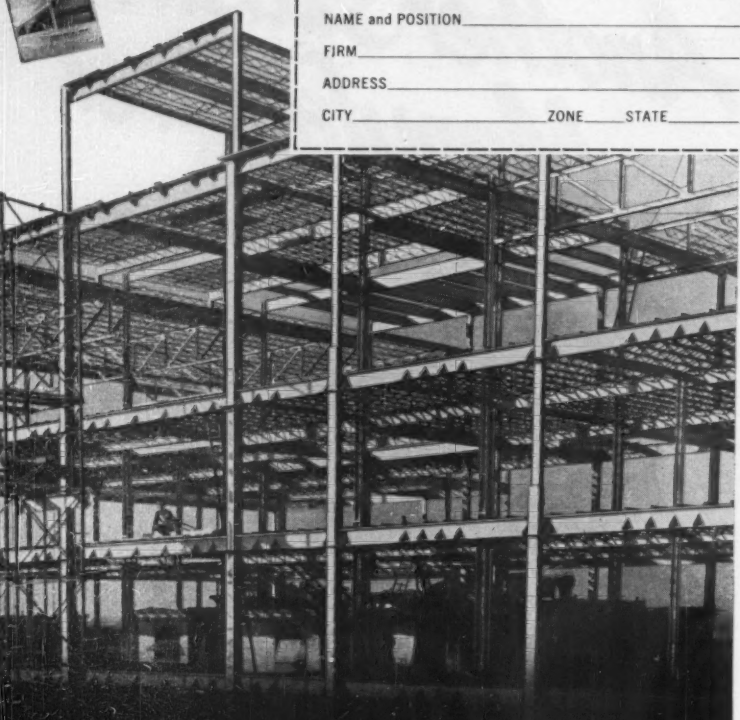
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versely with the square root of the size of the sample. One of the laws of probability states that as the size of a random sample increases, the error will decrease. This is not necessarily true of the non-probability samples.

Misconceptions

A common misconception about size of sample is to think of it usually in terms of a percentage of the universe, such as 5 per cent, 10 per cent, and so forth. The percentage size of sample is usually meaningless in relation to reliability. In sampling we consider sample size not in terms of the percentage of units from the universe but rather in terms of number of units.

Another common misconception, even if sample size is thought of in terms of number of units, is to believe that a large sample in absolute size should be taken from a large universe and a small sample from a small universe. However, if the sampling is really random this is not generally the case. The size of the universe is a minor factor in precision or sampling error.

Sampling error (or standard error). From the above we can see that chance errors in sample results are directly related to the amount of variation in the universe, and inversely related to the absolute size of sample. Statistical theory has developed formulas for measuring sampling error based on a combination of these two factors.

3. *Risks in using sample estimates.* In sampling we can never be sure that our estimate, even allowing for sampling error, is perfectly correct. But in probability sampling we can measure the confidence, or risk, that the error in the estimate will not be larger than calculated.

Only when the sample has been selected in compliance with the principles of chance can the risk in using the estimate be calculated. This is true because of the known principles of probability and because errors due to chance usually follow a known pattern. Based on this known pattern statistical theory has developed a fixed relationship between the amount of sampling error, and risk, in such terms as, "the chances are 2 out of 3; 95 out of 100; or 997 out of 1,000, that our estimate will not be in error by more than one, two, or three standard errors, respectively."

The foregoing three steps of estimating, measuring sampling error, and stating risk, may be illustrated by reference to our meal-ticket sample. Suppose we estimate from our sample of 250 meal-tickets that the average meal cost is \$1.25 and, by using statistical formulas, we calculate that the sampling error in this estimate is 5 cents. Probability theory then allows us to make the following statement with two to one odds of being correct: "The true average cost of a meal is between \$1.20 and \$1.30." Thus, we have made an *estimate* and stated the *sampling error* and our *confidence* of being right.

The basic points about sampling in the foregoing discussion may be summarized as follows:

1. Sampling can be called scientific only where reliance is placed upon the laws of probability to select the items from the universe.

2. Probability samples tend to give a representative picture of the universe if the sample is not too small.

3. Every sample estimate is subject to error even if processing is absolutely accurate, simply because it is a sample.

4. Statistical theory based on the laws of probability has provided objective ways of measuring sampling error in estimates derived from random samples, but not from judgment or other non-random types.

5. Errors in a sample estimate depend on two main factors: The extent of variation among the items in the universe, and the size of the random sample used to make the estimate.

6. Even though the size of the error can be measured in quantitative terms, we are never completely sure that the error may not be exceeded.

Experience has shown that the most successful and extensive statistical applications have occurred when there is close collaboration between the statistician and management.

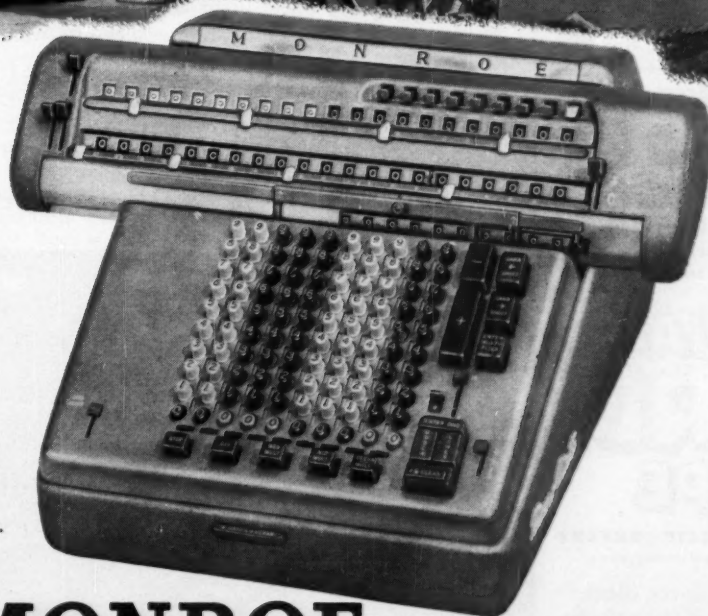
THE END

The opinions of this article are those of the author and are not necessarily those of the Department of Health, Education, and Welfare. The writer wishes to thank Irwin Wolkstein and Albert Mindlin for their technical review of this paper.

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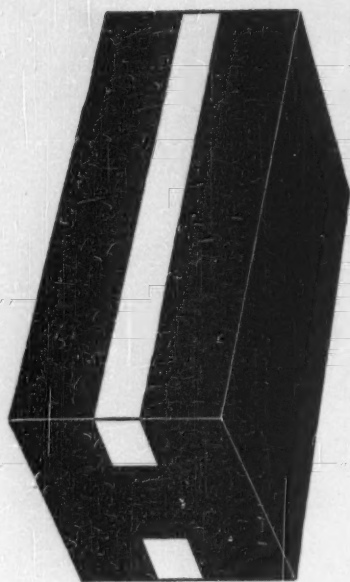
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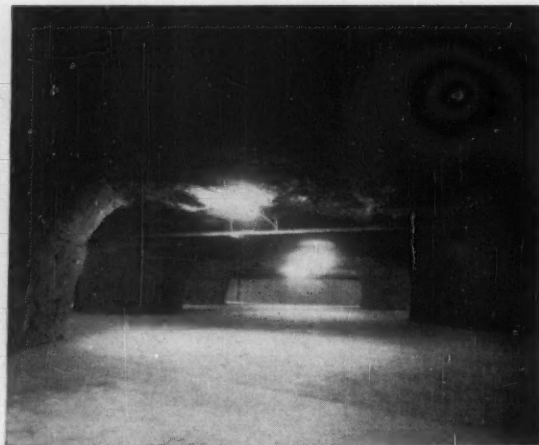
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Old limestone mine near Kansas City, Mo., is used by Inland Cold Storage Co., Inc., as in-transit warehouse for frozen food. Concrete floor makes for easier handling.



Ground-level entrance and single-level operating area are advantages of limestone mines. In and out traffic is facilitated by railroad spur and fifteen-truck capacity.

UNDERGROUND ECONOMY

*It's low-cost storage space
with overhead protection*

SAVINGS and safety are the main reasons behind the comparatively recent move to utilize former useless holes in the ground for storage and warehousing operations. Abandoned limestone, iron, and gypsum mines, salt caverns, and slate quarries are being turned into valuable space for petroleum products, frozen foods, records, and reserve machine tools. Economies stem from the small amount of preparation needed to transform the cavities into controlled humidity and temperature warehouses, and it takes less power to maintain ideal conditions below ground. Since out-of-sight areas are less vulnerable to air attack, both industry and Government are interested in the further possibilities for protection of vital matériel and documents. On this and the following pages some of the latest developments are shown.

More photographs on pages 66 and 67

**PHOTO
VISIT**



Spur penetrates 1,000 feet into warehouse, has eight freezer rooms built either side. Estimated capacity of this "deep freeze" unit is 2,500 train carloads.



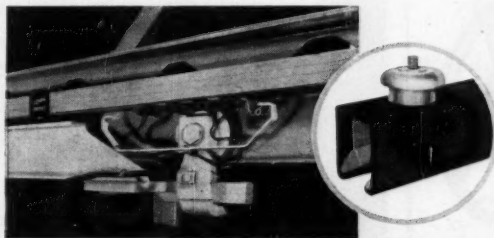
Concrete block walls, insulation material, and refrigeration equipment provide cooling rooms. Space above ground would cost more, be minus natural advantages.

its Advantages are turned to greatest account by Louden

Overhead handling possesses fundamental and inherent advantages over any other system. And Louden's pioneering experience, broader range of equipment and engineering knowledge turn these advantages to greatest account in planning a handling system for you. The American Stamping Company, Cleveland, Ohio, installation shown here is a typical example. The customer's needs were limited. He wanted a much better die storage system in his new building than he had in his old. Louden had the engineering knowledge *but it also had the equipment the customer needed* . . . a stacker crane. Because this was so, storage facilities could be restricted to a small area with narrow aisles between racks. Yet the stacker crane, suspended from the rails above, moves freely and maneuvers freely in these aisles. It is operated by any one of the stamping machine attendants.

Louden is unique in the engineering vision and experience it brings to your problem . . . and in the wide range of equipment it has to draw upon. Louden overhead handling saves labor and cuts handling costs sharply. Louden handling travels more swiftly, speeds operations, often leads to increased production. Louden permits maximum utilization of floor space and air space too. It repays its cost within a year . . . within months . . . has done so within weeks. The least you should do is see what the best in engineering recommends. Then will be time for you to decide.

New! Louden Shokpruf Electrification . . . for all monorail and crane installations. Hazards of open conductor bars now completely overcome by this exclusive Louden engineering development. Write for full details of this safe conductor system.



THE LOUDEN MACHINERY COMPANY • 5505 Broadway, Fairfield, Iowa
A Subsidiary of Mechanical Handling Systems, Inc.



To get away from the crowded, cramped stacking of dies along walls and needlessly wide aisles for trucking in its old building, the American Stamping Co. decided to *engineer* its facilities in its new building. Louden's engineering and equipment, particularly the stacker crane, allowed confinement of storage to 40 x 40 feet. Stacker crane moves on runways *above*, negotiates narrow aisles between racks easily, handles dies in and out of racks with delicacy, precision and speed.

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SINCE 1867 . . . THE FIRST NAME IN MATERIALS HANDLING

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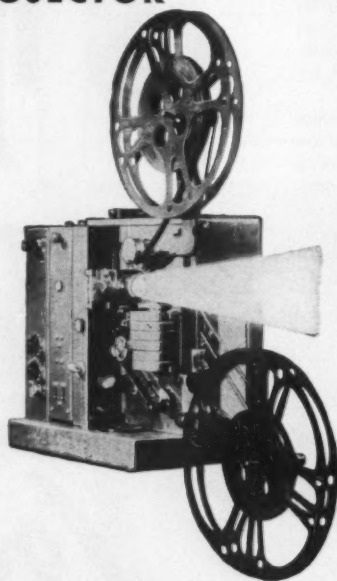
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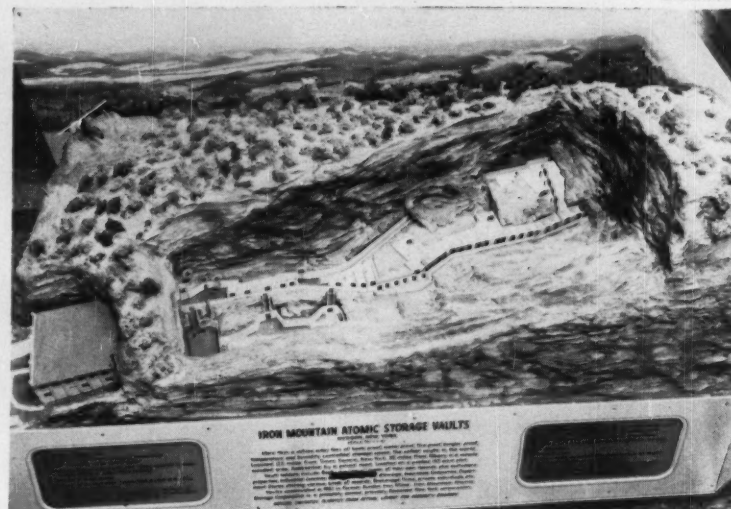
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UNDERGROUND ECONOMY

Continued



Near Hudson, N. Y., an abandoned iron mine has been turned into a
center for storing valuable documents, records, microfilms, and so on.
Available to industry and public, it offers protection against air attack.

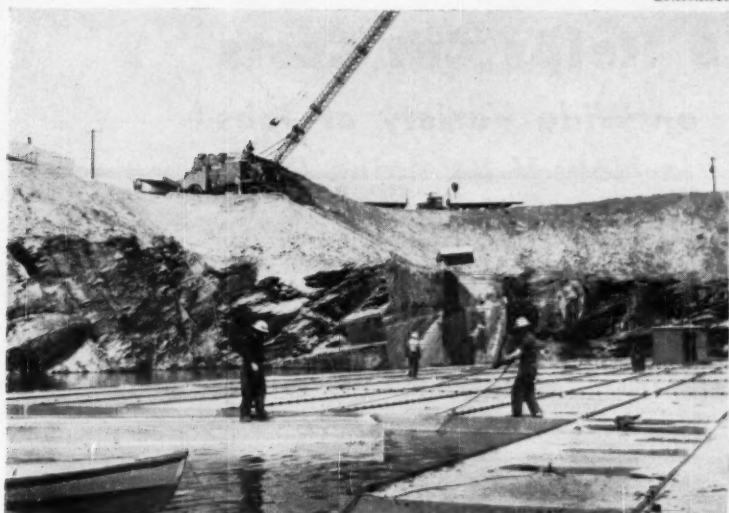


Microfilms are stored in drawers within vaults. Operated by Iron Moun-
tain Atomic Storage Corporation in cooperation with Railway Express,
mine offers varied storage and protection to small companies, individuals.



Vaults range from 250 to 12,000 cubic feet, are guarded round the clock
by human and mechanical means. Humidity and temperature control is
provided for, and a reserve power plant is ready for any emergency.

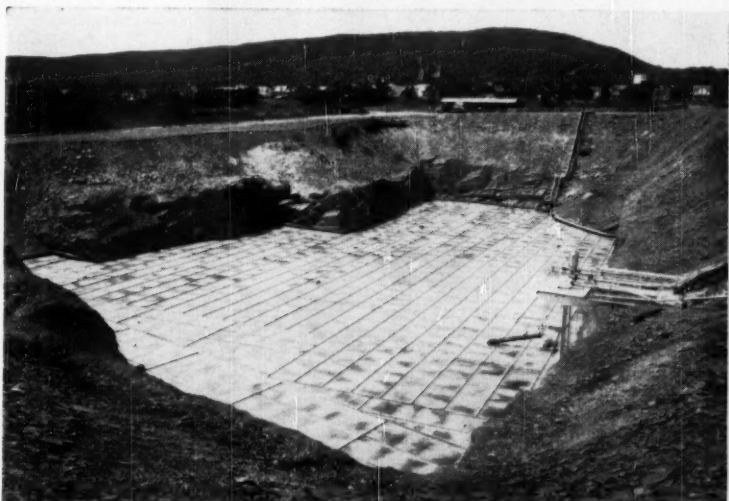
Continued



Petroleum industry has found most use for underground storage. Typical set-up is found near Wind Gap, Pa., where Esso Standard Oil Company, (New Jersey), has turned slate quarry into heating oil storage site.



Floating roof on "oil quarry" minimizes evaporation and contamination losses. Pressure of denser water of water table below prevents seepage. Nearby quarry is used to store water to maintain pressure of water table.



One more low-cost storage site completed. Through such operations, Esso figures to save by having refineries operating at consistent year-round level, instead of being affected by seasonal swings of oil demands.

For a sound system that gets things done and pleases your workers—start here today with an **RCA!**



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RCA gives you the benefit of nearly 30 years of research and development in industrial communications. You can depend on its equipment to channel verbal messages and work-music at exactly the right sound level throughout your plant and offices. Why not enlist the knowledge and experience of a trained sound engineer—your local RCA Distributor? Call him in to make an intelligent survey of your plant to determine and estimate on the equipment required to give both employees and management all the advantages of sound tailored to your plant's requirements—today and for the future.

RCA's new booklet, "Sound in Industry," will bring you facts and figures on why dollar-wise companies place real importance on in-plant communications. The coupon below will bring it free by return mail.



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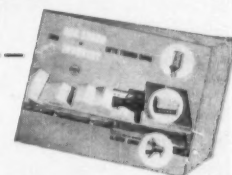
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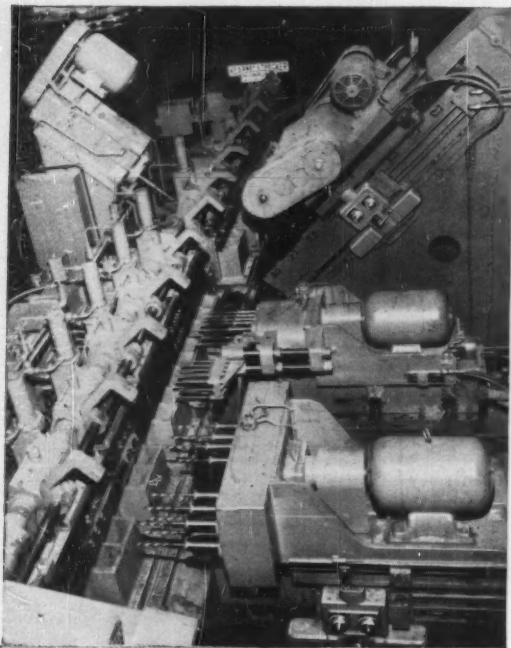
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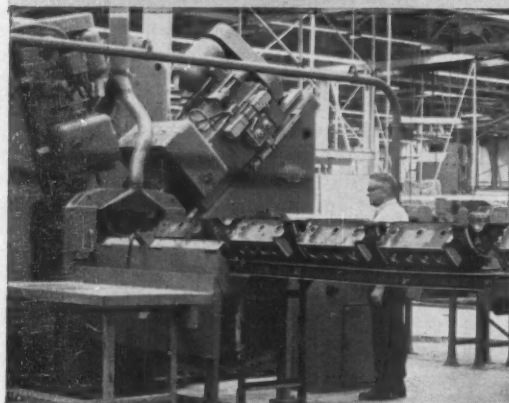
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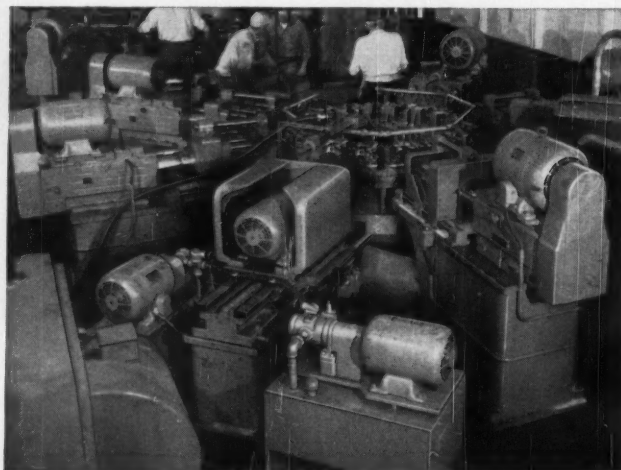
Kearney & Trecker machine for drilling and counterboring bearing caps. Note Vickers Traverse and Feed Cycle Control Panels visible on two heads; advantages include smooth and constant feed rates, easy adjustability, compactness and simplified installation.



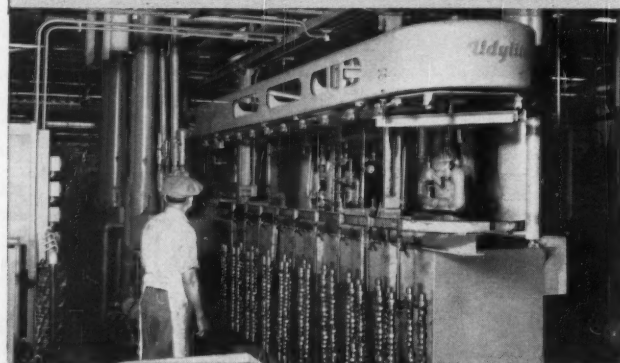
Three Greenlee Transfer Machines in automatized cylinder block line use Vickers Hydraulics. Compact Vickers Traverse and Feed Cycle Control Panel shown on head assures smooth and constant feed rate regardless of fluctuations in tool resistance or changes in hydraulic pressure or volume.

Representative of the many and varied production machines equipped with Vickers Hydraulics in the new Packard V-8 Engine Plant at Utica, Michigan are those shown here. Among the advantages of Vickers Hydraulics are: (1) simplification of design, (2) adaptable to automation, (3) ease of providing interlocks and overload protection, (4) ease of maintenance with minimum down time. Equally important, Vickers Hydraulics gives you the benefits of a nation-wide and full-time field engineering and service organization.

The Vickers Application Engineer near you will be glad to show you the benefits you can obtain by using Vickers Hydraulics. Write for a copy of Bulletin 5002.



Michigan Drill Head Co. 8 station dial machine for connecting rods and caps. Vickers Hydraulic Power Units shown are complete hydraulic "packages" (pump, electric motor, valves, oil reservoir, filter, etc.) that simplify design, and save installation and maintenance costs.



Udylite Automatic Processing Machine saves space and assures more uniform quality by using Vickers Hydraulics to raise, lower and transfer cam shafts through cleaning, coating and rinsing baths in "Lubriting" process.

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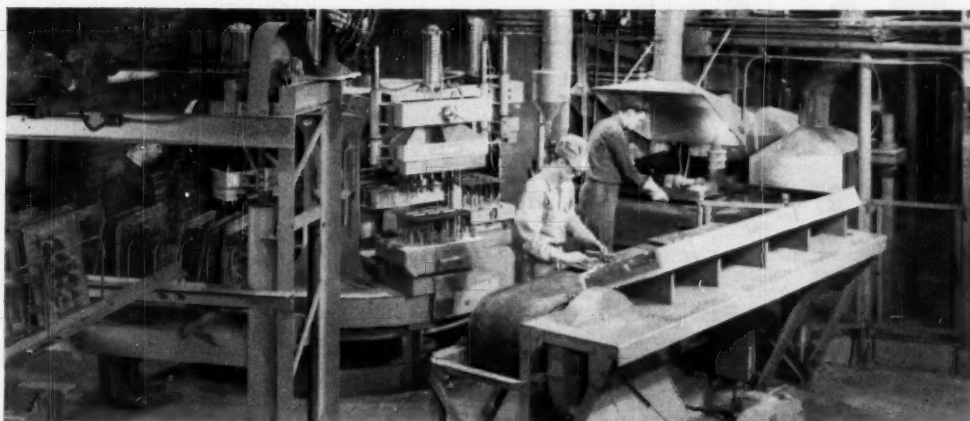
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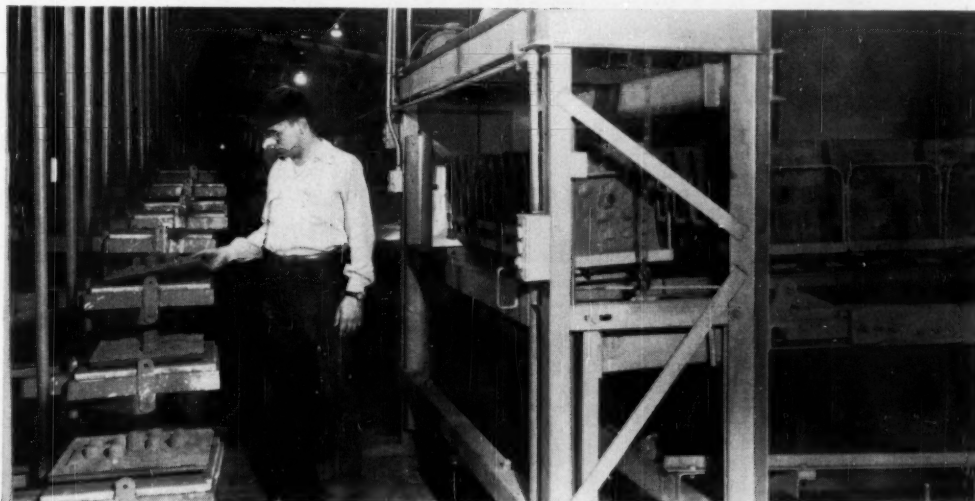
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NEW METHODS AND MATERIALS

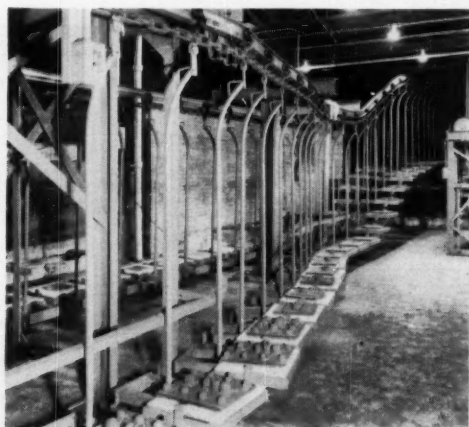
New aids to production— from conveyors to carbon dioxide



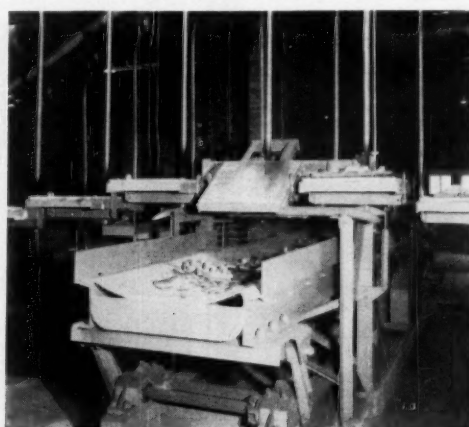
Shell molding is conveyORIZED all the way by new Link-Belt equipment. From shell-making (right) and assembly (left) to final shakeout (photograph below) manual operations are held to a minimum.



Ready for pouring, molds wait on storage conveyor until needed, are then transferred to trolley conveyor (left) for trip to foundry pouring station. They remain on conveyor until metal has cooled.



In pouring position—horizontal and without back-up material—molds move smoothly through plant. Note empty pallets returning at left.



After cooling, shells are automatically dumped onto this oscillating conveyor, spent sand falls through screen, castings move to clean-up area.

How to speed them along with conveyors

From receiving to shipping, conveyors are playing a growing rôle as industry strives for automatic production. Pictured here are two new and interesting set-ups.

One, a shell-molding system (see September 1954, page 40) developed by Link-Belt Company, not only takes a big step forward in foundry operations, but also points the way for other industrial processes. According to Link-Belt, the system is unusually flexible, and can be fitted into a limited amount of space. Yet it practically eliminates manual lifting and transportation, and holds labor requirements to a minimum. Link-Belt supplies all the equipment, including machines for making the bonded sand shells into which metal is poured (top photograph), the conveyors, and the shakeout.

A vastly different but equally interesting new conveyor set-up is a built-for-action warehouse handling and storage system, using Alvey-Ferguson *Live Rail* conveyors (see photographs, page 70). Installed at the new Westinghouse Appliance Manufacturing plant (see January, page 23), the system is designed for straight-line handling and "first-in, first-out" selection of products. It should do much to prevent confusion and "loss" of valuable items. At model-change periods, separate conveyor lanes can be reserved for old and new models; or, taking advantage of the first-in-first-out feature, new parts can be fed in behind the old with the assurance that they will not move out until previous supplies are exhausted.

Tapes that protect, support, insulate

In machining, plating, packing, and even maintenance, new industrial tapes are proving their ability to solve problems and save time.

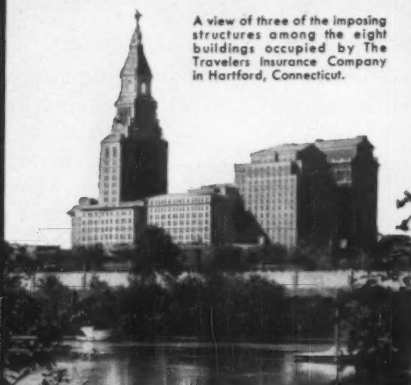
Far more than just patch-up or hold-together materials, they're being built into a wide variety of products, and used for color coding, protection of sharp corners (on dies and fixtures, for instance), and as a replacement for rivets and other fasteners on brake drums for washing machines and similar working parts. Indeed, a 56-page manual just issued by Minnesota Mining & Manufacturing Company lists several hundred ways in which tapes serve the metal-working industry alone.

Among the newer electrical and heat-resistant tapes are several made with *Mylar*, Du Pont's new polyester film, including one with a vapor-deposited aluminum coating. *Mystik Adhesive*

DITTO one-writing system



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A view of three of the imposing structures among the eight buildings occupied by The Travelers Insurance Company in Hartford, Connecticut.



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products has a glass fiber-reinforced tape with a silicone adhesive, that's said to offer not only high strength and temperature resistance (Mystik reports it shows excellent bonding ability throughout the range from minus 100° to plus 550° fahrenheit), but also unusual stability in the presence of many acids, alkalis, and oils.

Among the special-purpose tapes are a tape for sealing autoclave bundles and one of glass fibers and polyethylene.

The autoclave tape has a chemical striping which becomes visible only after exposure to high heat and pressure and thus makes it possible to tell at a glance which bundles have been autoclaved and which have not. This one, originally developed for hospital use, should find application in many industrial processes using live steam.

The glass fiber-polyethylene tape is so new that it's just beginning to look for industrial jobs. Minnesota Mining, which developed it for reinforcing plastic weather balloons, notes that it's strong and translucent; can be made in widths from 1/2 to 34 inches.

New chemicals from the farm

Fibers, plastics, paints, and adhesives are among the materials that stand to benefit from large-scale commercial production of chemicals made by fermentation from farm wastes.

Introducing *itaconic acid*, the first of a planned line of these chemicals, John McKeen, president of Charles Pfizer & Company, Inc., noted the advantages of agricultu-

ral wastes as an industrial raw material source (low cost, abundance, renewability) and pointed out that living organisms can produce—by fermentation—chemical compounds that are difficult or impossible to make any other way.

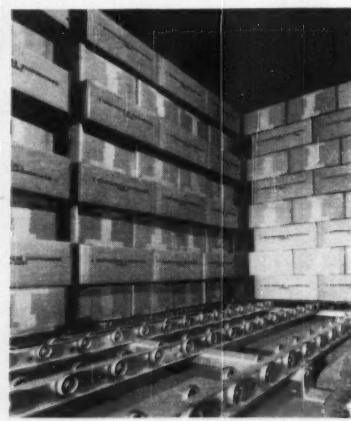
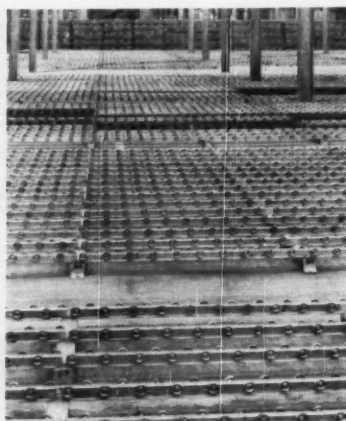
Itaconic acid is described as a white, crystalline material, stable but highly reactive. Pfizer chemists say it can be used to improve the mar resistance of transparent thermoplastics, increase the toughness of polyamide (nylon-type) resins, reduce static attraction of synthetic fibers, and speed drying of paints. Compounds made from *itaconic acid* are also said to increase the moisture resistance of cellophane and improve the efficiency of detergents.

Itaconic acid is not in itself new, but Pfizer has found a way to produce it in large quantities from low-grade cane or beet sugar, thus opening it up for major industrial use.

What you can do with CO₂

Carbon dioxide's potential as a production tool is almost unlimited, says Liquid Carbonic Corp. It has assembled an impressive array of examples to prove its point. This old-but-new compound now boasts a list of uses from arc welding to pie production.

As "dry ice," and in liquid form, carbon dioxide is well known as a refrigerant. It aids pie crust production by keeping lard solid so it can be pulverized, freezes mercury patterns for precision casting, simplifies deflashing of molded rubber parts by making them temporarily



Rolling floor at Westinghouse appliance plant brings flexibility to product storage, prevents mix-ups, speeds deliveries. Built of AF Live Rail Conveyors, it handles cartons on flat metal pallets, is fed by fork trucks.

Do you know the best way to evaluate your firm's Workmen's Compensation insurance?



THE FRAME OF MIND of your returning employee is a fairly accurate gauge of the effectiveness of your Workmen's Compensation plan in action—and one your other employees will be quick to notice.

Just keep your eye on the employee returning to work after being laid up in an accident covered by the insurance.

If the employee's claim was administered by men who didn't know their business—if he had to argue and wrangle and wait to receive his compensation checks—everyone in your office or plant will know it.

On the other hand, if the employee's claim was dealt with by experienced, skilled, *available* insurance men—if he got not only what was due him, but some extra attention besides—everyone in your office will know *that*, too.

The result will be employee good will. And what a difference in productiveness that can make!

The insurance company that knows what it's doing offers you other advantages, too. For instance, it can work with you to *prevent* accidents and to lower rates.

The Travelers has more claim offices—and a larger staff of safety engineers—than any other company writing Workmen's Compensation insurance. When your firm's plan comes up for renewal—or if you need a new plan now—get in touch with a Travelers agent or your broker. With no obligation to you, he'll be glad to outline a plan to meet your specific needs.

YOU WILL BE WELL SERVED BY

THE TRAVELERS



INSURANCE COMPANIES, HARTFORD 15, CONNECTICUT
All forms of personal and business insurance
including Life • Accident • Group •
Automobile • Casualty • Fire

Wonderful things happen
to your office
when you buy

STEELCASE



... wonderful things like having a happier, more energetic office working force ... profitable things, such as saving as much as 25 per cent in office floor space ... satisfying things like knowing your office furniture problems are over, since with Steelcase your first cost is your only cost. With absolute satisfaction as its golden rule, Steelcase continues to serve the fine companies of America ... as is has for over forty years.



FREE ... "Sunshine Styling" ... the most unusual, most dramatic office furniture brochure ever created. Please request it on your letterhead, addressed to Department A, or ask your local authorized Steelcase dealer.

STEELCASE INC

GRAND RAPIDS, MICHIGAN

WHENEVER YOU WANT TO MAKE A GOOD OFFICE ... A LITTLE BETTER

hard and brittle, and shrinks close-fitting metal parts to speed assembly.

Less familiar, perhaps, are applications in which carbon dioxide serves as a weak acid (for neutralizing caustic soda in textile processing, for treatment of leather before tanning, for neutralizing liquid wastes, and the like). Carbon dioxide can also be used in evacuating electronic tubes and purging electric generators, and as a reacting chemical in manufacturing aspirin and white lead paints.

In welding, carbon dioxide gas is turning out to be an acceptable substitute for the more expensive argon and helium gases in inert-gas-shielded arc processes.

It's another example of a product that's "never too old to learn" (see February, page 82), and one that may help you solve production problems.

Black light blazes new trails

Like carbon dioxide, ultraviolet light is a familiar energy source that's finding a good many new ways to serve industry.

Use of fluorescent dyes to find flaws in metal parts is well known. But Burton Manufacturing Company points out that fluorescent tracers in powdered form have a

number of other uses. They can be added to coatings so that inspection under black light will show up areas of incomplete coverage; or they can be added to rubber and paper pulp mixes to identify various batches.

Fluorescent inks also provide a means for marking textiles and garments with patterns, bolt numbers, dates, and other information in a way that is invisible to the purchaser, but readily apparent to the producing plant.

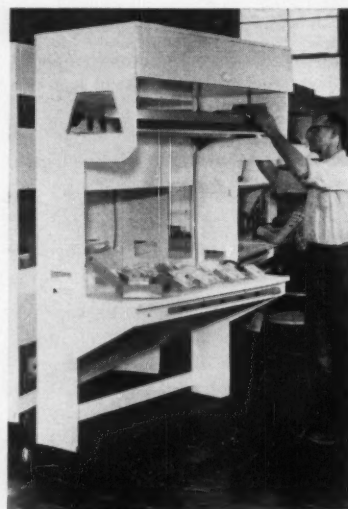
Ultraviolet light is playing an expanding rôle in chemical processing, too—as a means for initiating reactions in producing detergents, perfumes, and the like.

And these versatile light rays are even useful in rodent control. Portable ultraviolet lamps help spot infestation.

Ideas for your plant

Here are booklets, published within the past six months, that can be used to train plant personnel, improve production methods, safeguard equipment. All are free on letterhead request.

Controlling liquid level. Comprehensive discussion of the basic principles of liquid level measurement, including both direct and inferential methods, plus diagrams



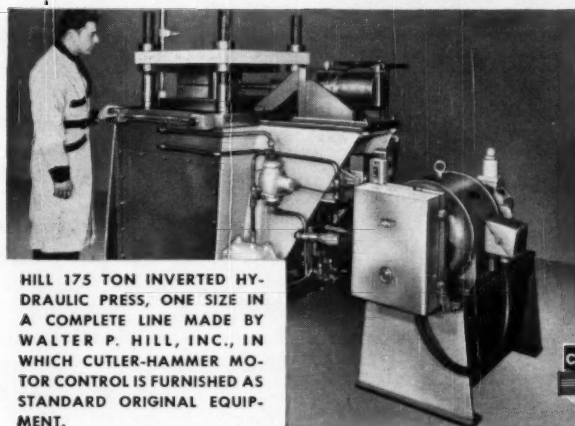
Portable assembly line

If you're planning to move, or even shift your assembly lines in the future (and who isn't?), you'll be interested in this unitized assembly bench designed and built for its own use by Assembly Products, Inc., Chesterland, Ohio, manufacturer of meters, relays, and automatic controls. Equipped with built-in lights, electrical outlets, and



air connections, the benches fit together neatly when set up, are easily separated and moved to a new location. AP engineers point out that the benches not only saved time and eliminated confusion when the company moved to a new, larger plant, but also provide a high degree of employee comfort and flexibility in the new location.

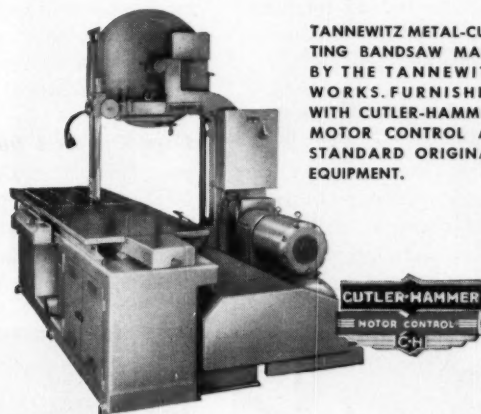
CUTLER-HAMMER
 CHOICE OF THE LEADERS MOTOR CONTROL THE MARK OF BETTER MACHINES



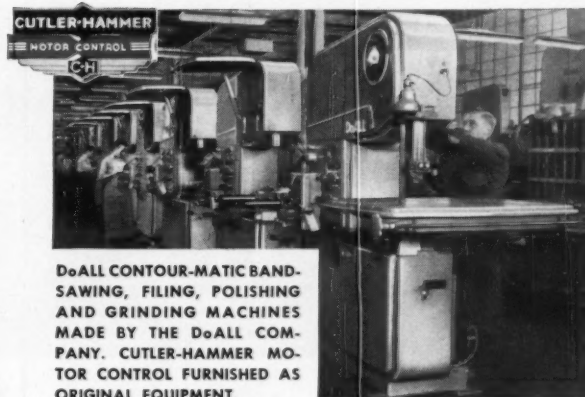
HILL 175 TON INVERTED HYDRAULIC PRESS, ONE SIZE IN A COMPLETE LINE MADE BY WALTER P. HILL, INC., IN WHICH CUTLER-HAMMER MOTOR CONTROL IS FURNISHED AS STANDARD ORIGINAL EQUIPMENT.



TURCHAN TRACER-CONTROLLED THREE DIMENSIONAL HYDRO-ROUTER MADE BY THE TURCHAN FOLLOWER MACHINE COMPANY. EQUIPPED WITH CUTLER-HAMMER MOTOR CONTROL.



TANNEWITZ METAL-CUTTING BANDSAW MADE BY THE TANNEWITZ WORKS. FURNISHED WITH CUTLER-HAMMER MOTOR CONTROL AS STANDARD ORIGINAL EQUIPMENT.



DOALL CONTOUR-MATIC BAND-SAWING, FILING, POLISHING AND GRINDING MACHINES MADE BY THE DOALL COMPANY. CUTLER-HAMMER MOTOR CONTROL FURNISHED AS ORIGINAL EQUIPMENT.

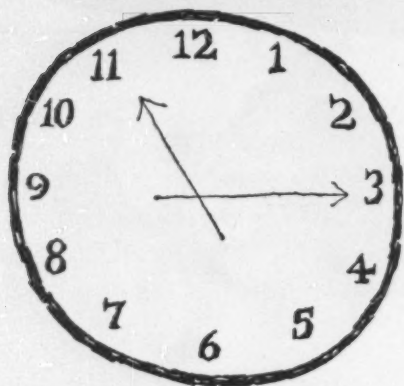
Preferred...because proved

In the competitive struggle for business, there are a certain few companies in every field that forge steadily ahead. Their products are preferred by a majority of users and they enjoy a position of marked competitive advantage. That their products are preferred because these best fit the market's needs is hardly necessary to be stated. But that their products are *good* because the manufacturers struggle endlessly to make them *better* is significant indeed. It is worthwhile noting these manufacturers exert the most rigid control of quality in raw materials, processed parts and purchased components. The more critical the product or the amount of money invested in the product, the more stern and exacting are the

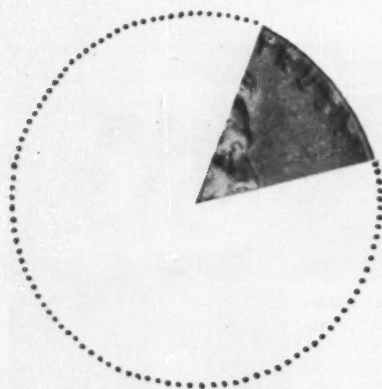
requirements.

And it must make sense to any manufacturer of machines that leading machinery builders do specify and insist in large degree on Cutler-Hammer Motor Control for the vital functions in their products which are critical not only in their cost, but in the role these machines play in users' plants. Cutler-Hammer Motor Control is preferred because it has been *proved* . . . in thousands of plants over scores of years. Considering what the *right* motor control means, you too should specify Cutler-Hammer. CUTLER-HAMMER, Inc., 1436 St. Paul Avenue, Milwaukee 1, Wisconsin. Associate: Canadian Cutler-Hammer, Ltd., Toronto, Ont.

neenah says:



you've spent your life
gathering the ideas you put
into your business letters...



why not spend a fraction of
a penny more to put those
valuable ideas on a
fine rag bond by
neenah?

Want a letterhead that will be preferred by your customers? Then ask your printer for a free copy of the "Neenah Guide to Preferred Letterheads." It is based on a four-year survey that determined what businessmen preferred in letterheads.



NEENAH PAPER COMPANY • Neenah, Wisconsin

showing how the various systems may be set up. *Bulletin 1161*, Minneapolis-Honeywell Regulator Company, Industrial Division, Wayne and Windrim Avenues, Philadelphia 44, Pa.

How to select an overhead travelling crane. Ratings and dimensions, controls and lubrication are among the topics outlined in this eight-page brochure. Whiting Corporation, Harvey, Ill.

Bulk materials handling. How to pull profits out of thin air by using pneumatic systems to move dry pulverized materials. Fuller Company, Catasauqua, Pa.

ABC's of spray equipment. How it's built, what causes trouble, how it should be maintained. Also worth having: *Spray gun motion study* (how to save time and effort in surface coating), published last year. DeVilbiss Co., Toledo 1, Ohio.

Electronic controls. What they are, and how to apply them to heating, ventilating, and air conditioning. Booklet F-6437, Barber-Colman Company, Rockford, Ill.

Stainless tubing and pipe. Two booklets are offered. One shows how stainless alloys can solve pipe and tubing corrosion problems in food, paper, chemical, textile, rubber, and pharmaceutical processing; metal fabricating; and the like. The

other gives a great deal of useful fabrication data. Both from Alloy Tube Division, Carpenter Steel Company, Union, N. J.

ABC's of transformer design. Developed for use by the company's own employees, this manual explains electrical principles and a good many technical terms in simple, easy-to-understand style. Allis-Chalmers Manufacturing Company, Milwaukee 1, Wis.

Brazing. Twenty-four page manual tells how to use silver alloys, filler metals, fluxes; gives pointers on design for brazing. Air Reduction Sales Company, 60 East 42nd Street, New York 17, N. Y.

Phosphate coatings. Two booklets tell how to prepare metals for painting. One deals with iron phosphate compounds; the other with zinc phosphates. Both are offered by Oakite Products, Inc., 19 Rector Street, New York 6, N. Y.

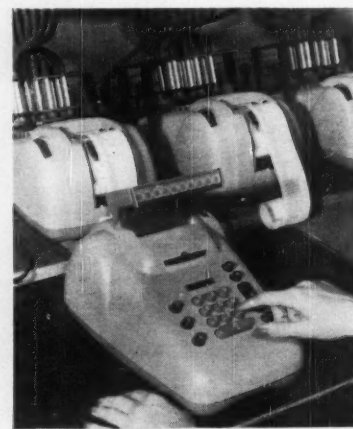
Wet blasting. How and where to use *Liquamate* process for precision finishing of metal parts. American Wheelabrator & Equipment Corporation, Mishawaka, Ind.

Grinding and polishing. Sixty-page *Production Digest* brings together a score of papers prepared by technical specialists during the past few years. Behr-Manning Corporation, Troy, N. Y.



Tip-top tester

Rubber-tipped fingers, a compressed air hook-up, and a light-controlled indexing system let one operator test ten adding machines at Burroughs Corporation. The system was built in the plant for only \$6,000. The master unit is housed in the case of a standard adding machine, equipped with micro-



switches (located beneath keys) which activate the solenoids that control air flow to the rubber-tipped fingers poised above each key of the machines under test. Next step: Full automation with a punched-tape set-up for the master unit that will put the machines through their paces automatically.



A sign of greater usefulness

Now the Chase National Bank and the Bank of the Manhattan Company are one bank. Here is what it means.

We like our spanking new sign. We hope everybody will. But it tells only a small part of our story. It spells out for you the plain fact that two great banks have joined together. We'd like to tell you more.

First of all, the Chase Manhattan sign is a new symbol of usefulness. Belonging, as it does now, to 95 bank-

ing offices in Greater New York and 17 overseas branches, it means better service for our customers and friends.

And back of the Chase Manhattan sign are its most important assets—13,000 experienced people, all working together to make their bank more useful.

That's it. That's the story behind

the new Chase Manhattan sign—*usefulness*, and *people* working together to better serve business, industry, and all America.

**THE
CHASE
MANHATTAN
BANK**

(MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION)

**correspondence
automation
is here!**

pd



This sleek, modern, Peirce dictation machine has a real under-cover story—a list of **FIRSTS** to make an engineer's eye gleam and a businessman's heart warm up . . . because these **FIRSTS** mean unequalled dictation economy and ease . . . precision beyond belief . . . such benefits in operation that no office can afford to by-pass them . . . Flashback for "Instant Thought Review" . . . hear yourself think . . . you change your dictation the *instant* you change your mind.

Peirce too was **FIRST** with true Magnetic Belt Dictation on the famous **PEIRCE MAGIC MAGNEBELT** with *flash-back* to previous dictation.

FIRST with Correspondence Automation.

FIRST with Shock-proof Construction.

FIRST with Network Dictation systems.

Why slow your 1955 jet thinking to 1910 horse and buggy methods? **STOP SCRATCHING** the surface, get a complete **FREE** demonstration of **PEIRCE MAGNETIC BELT DICTATION**.

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PEIRCE DICTATION SYSTEMS

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PEIRCE

EXECUTIVES' NEW WORLD

Continued from page 38

good man is not to be measured in terms of self-interest.

He may wind up by having to decide in his own life the question of whether he himself will step aside from his business and run for office. He is constantly deploring the lack of business men in government, yet most of his friends duck taking that particular plunge, and he has to decide whether he will get in and do his bit.

But of course there are many ways in which he can participate in the orderly solution of great public questions without running for public office.

He can, first of all, make it possible for young men to get experience in government on a lend-lease basis. He can give suitable leaves of absence, with financial help where that is permissible, so that in periods of say two years at a time, important local, state, and federal agencies can staff themselves with able people borrowed from business.

What a wonderful thing it would

be if every future top executive in a company could in his earlier years have served two years in government, thus establishing in his own life personal standards of what to expect from public servants and thereby know good from bad; right from wrong.

We ask young men to give two years of their lives to military service. Why should we not likewise make it possible for young men to give two years of their lives to serving their country in peace? Government would get brains and character; industry would get understanding of governmental problems; and government "by the people" would have taken a long step toward a brighter future.

And the senior executive can himself take a leave of absence from his company. He can make himself available and serve his country in a high post.

Among the nations of the world we are rather unique in employing this device for bringing proven ability into government. Much is said,

WHERE *Elegance*
IS A REQUISITE



STANLEY De Luxe \$69.50*
With Tray \$78.90*

YOU WILL FIND

Climax **CLUB SMOKERS**

These beautiful all-metal, chrome-trimmed stands are available, with or without trays, in several smart modern styles and colors. They won't wobble or tip over. Write for name of nearest supplier and new illustrated brochure 5-DR.

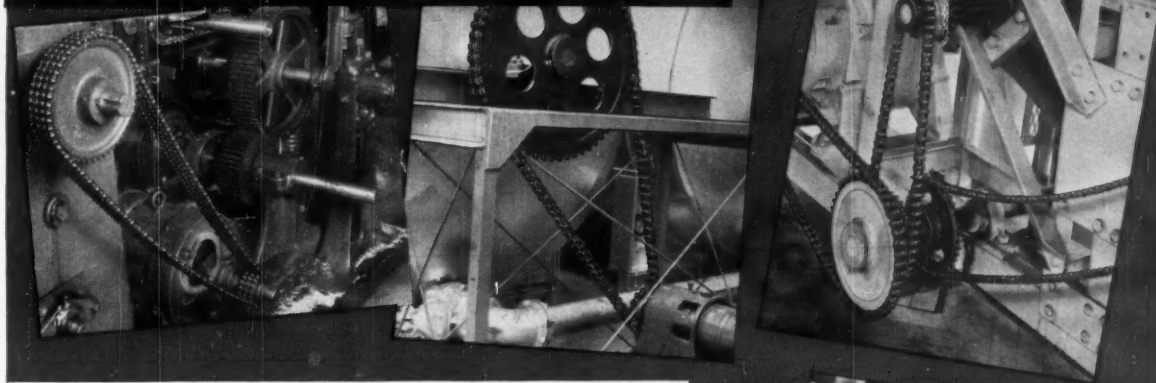
*f. o. b. factory



ARNOLT CORPORATION
Warsaw, Indiana, U. S. A.

LOEWY De Luxe . \$85.50*
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FOR DRIVES LIKE THESE...



SELECT
DIAMOND
ROLLER CHAINS *from*
and SPROCKETS *Stock*



With so wide a range of *stock* Roller Chains and Sprockets now available, drive requirements can be met in the shortest possible time.

Whether the drive center distances are short or long; speeds high, low, or medium; Diamond Roller Chains will do the job. And power transfer, in large or small amounts, presents no problem. New Catalog 754 covering *stock* Chains and Sprockets will help you to the correct selection.

DIAMOND CHAIN COMPANY, Inc.

Where High Quality has been Traditional for 65 Years

Dept. 422, 402 Kentucky Avenue, Indianapolis 7, Indiana
Offices and Distributors in All Principal Cities

Please refer to the classified section of your local telephone directory under the heading CHAINS or CHAINS-ROLLER

ALWAYS PRELOADED

For many, many years, Diamond Chain has been preloaded after assembly for the purpose of bringing pin-bushing seating into stabilized relationship prior to field installation.

Catalog 754 is Available Now

You will find complete information, helpful illustrations and useable tables on how to select a stock roller chain drive, how to calculate chain length, speed ratios for sprocket combinations; installation recommendations, single and multiple-strand chains—all pitches; flexible chain couplings, double pitch chains, conveyor chains, etc., etc.

Write for this 64-page Catalog 754 today.

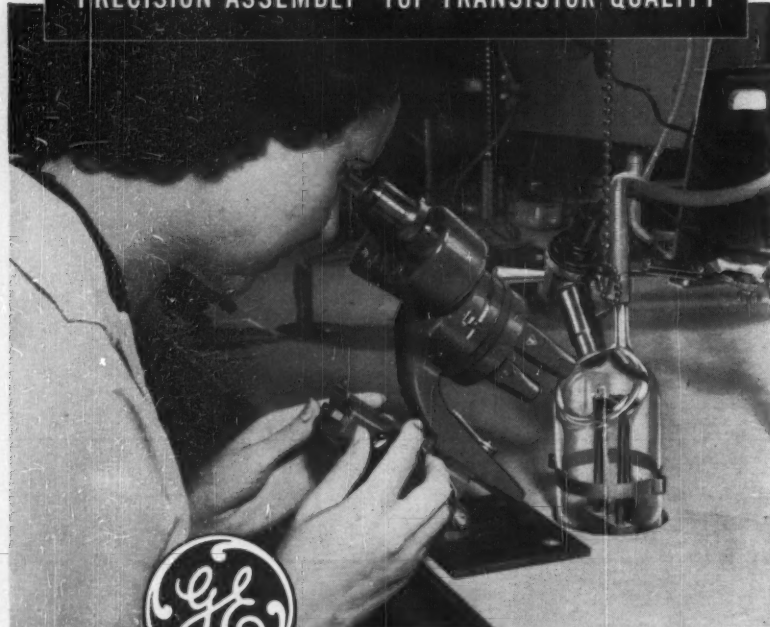


Finished-Bore Sprockets complete with keyways and setscrews

Taper-Lock Sprockets with replaceable bushings to meet wide range of bores

Labeled and Packaged 10' Lengths of Chain. Reels for 50' and over.

HER 40-POWER MICROSCOPE ASSURES PRECISION ASSEMBLY—TOP TRANSISTOR QUALITY



Germanium Products

TRANSISTORS • DIODES • RECTIFIERS

THE EYES of this operator only see tiny transistor elements about to be assembled. We see much more. In order to supply transistors in greater quantities and at lower unit cost, General Electric is already geared to mass-produce them.

But, in addition to this widely publicized G-E "rate-grown" transistor, there are other germanium products of immediate concern to circuit design engineers. Stacked rectifiers were recently announced. These units are of the smallest size yet developed. They reduce comparable rectifier size and weight by as much as 75%. For your application it is important to note the G-E stacked rectifier can be assembled with 1 to 12 fins in any of 143 standard power combinations.

Diodes, too, share this spotlight on semi-conductor product advancement. Last year hermetically sealed units were perfected to master the damaging influences of moisture or gas contamination. Their stability and pulse recovery characteristics ideally answer requirements of magnetic and computer customers. Production now moves forward rapidly.

General Electric is at a point today where only development of new or improved equipment incorporating germanium products is a limiting factor. G-E germanium is ready to assist the engineer at work on business-office electronics, automation of manufacturing processes, miniature radios, irons, etc. So, whatever your current electronic design problem is, act now to obtain up-to-date information on all of the G-E germanium products.

General Electric Co., Germanium Products, Section X7855, Electronics Park, Syracuse, N. Y.

Progress Is Our Most Important Product

GENERAL ELECTRIC

for example, of the trained civil servant group in England, which does set extraordinarily high standards. Some of the best young men in that country leave the university with the fixed purpose of devoting their lives to government service, and by the time they reach mature years they have a fund of knowledge and experience which greatly increases their effectiveness and worth.

Non-Professionals

In comparison, the American business man will be something of an amateur throughout his entire period of government service. He does, however, bring to government a freshness of viewpoint, and a dynamic quality that is important. He knows precisely what the people back home are thinking, because he has been helping to lead them in their thinking. This serves as an offset to doctrinaire attitudes by professionals. Furthermore, he has a directness about him that can be very useful in getting things done and acted upon.

The experience, moreover, is extraordinarily useful to the business

man himself. He has much to learn when he comes into government; and if he does not start with humility he is sure to acquire it before he leaves.

The first lesson is that he has practically no authority in government. The built-in system of checks and balances in our Constitution, which we are taught from childhood is the bedrock of our liberties, was designed to keep the business man from throwing his weight around too much. He calls it red tape instead of checks and balances when it gets in his way, but there it is all the time. Actually, he must drop the air of command and embark upon a life of persuasion. Only to the extent that he can develop concepts of genuine merit which will prevail because they are right will he be a success. To the extent that he tries to impose his ideas because they are his, right or wrong, he will be a failure.

And he will find that he is strictly on his own. At home he has often been made to look smart by the staff which he has developed, a staff sometimes so good that even the man himself is deceived into think-

If your firm operates its own trucks...



Tachographs can do these things for you:

1. Cut truck repair bills
2. Give you closer driver supervision
3. Make drivers safety-conscious

The Tachograph is a recording speedometer which mounts on your truck's dashboard. It automatically records the following information on an easy-to-read, wax-coated chart: When truck started—How fast it traveled—When truck was in motion—When it stopped—How long truck idled and Distance between stops.

Send this coupon today! We're sure you'd like to know more about the Tachograph...the many ways it can help you make your trucking operation safer, more economical, more efficient. Fill out the coupon below. Send it to us and get Bulletin SU-3...it gives the whole Tachograph story.

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speedometer
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WAGNER ELECTRIC
CORPORATION

Now Puerto Rico Offers 100% Tax Exemption to New Industry

by BEARDSLEY RUML

"We don't want runaway industries" says Governor Muñoz. "But we do seek new and expanding industries." Federal taxes do not apply in Puerto Rico, and the Commonwealth also offers full exemption from local taxes. That is why 300 new plants have been located in Puerto Rico, protected by all the guarantees of the U. S. Constitution.



BEARDSLEY RUML

IN a dramatic bid to raise the standard of living in Puerto Rico, the Commonwealth is now offering U. S. manufacturers such overwhelming incentives that more than three hundred new factories have already been established in this sun-drenched island 961 miles off the Florida Coast.

First and most compelling incentive is a completely tax-free period of ten years for most manufacturers who set up new plants in Puerto Rico.

For example, a recent analysis for one Ohio firm revealed that due to tax exemption and operating economies it will increase its net profit from \$187,000 to \$442,000 a year by locating its new plant in Puerto Rico.

The Commonwealth will leave no stone unturned to help you get started. It will build a factory for you. It

How Corporate Tax Exemption Boosts Profits

If your net profit after U. S. Corporate Income Tax is:	Your net profit in Puerto Rico would be:
\$ 17,500	\$ 25,000
29,500	50,000
53,500	100,000
245,500	500,000
485,500	1,000,000

How Dividend Tax Exemption Boosts Income*

If your income after U. S. Individual Income Tax is:	Your net income in Puerto Rico would be:
\$ 3,900	\$ 5,000
7,360	10,000
10,270	15,000
14,850	25,000
23,180	50,000
32,680	100,000
43,180	200,000
70,180	500,000

*Dividends are tax-free only if paid to residents of Puerto Rico by a tax-exempt corporation. Examples are based on Federal rates (Jan. 1, 1954) for single persons.

will help you secure financing. It will even screen job applicants for you—and then train them to operate your machines.

What About Labor?

Puerto Rico's labor reservoir of 650,000 men and women has developed remarkable levels of productivity and efficiency. Twenty-eight factories are now producing delicate electronic equipment.



Aerial view of the modern city of San Juan, population 389,316, the capital and financial center of Puerto Rico. The city's magnificent harbor alone handled more than three million tons of freight last year.

Among the U. S. companies already manufacturing in Puerto Rico are Sylvania Electric, Carborundum Company, Remington Rand, Univis Lens, Shoe Corporation of America and Weston Electric.

Six steamship companies and four airlines operate regular services between Puerto Rico and the mainland. San Juan is just 5½ hours by air from New York. Trade with the mainland is duty-free.

"Close to Paradise"

Listen to what L. H. Christensen, Vice President of St. Regis Paper, says:

"The climate is probably as close to paradise as man will ever see. I find Puerto Ricans in general extremely friendly, courteous and cooperative."

"This plant in Puerto Rico is one of our most efficient operations, in both quality and output. Our labor has responded well to all situations."

Are You Eligible?

Says Governor Muñoz: "Our drive is for new capital. Our slogan is not 'move something old to Puerto Rico,' but 'start something new in Puerto Rico' or 'expand in Puerto Rico'."

The Commonwealth wants to attract all suitable industries to Puerto Rico—especially electronics, men's and women's apparel, knitwear, leather, plastics, optical products, costume jewelry, small electrical appliances, hard candy and pharmaceuticals.

To get all the facts, and to find out whether you and your company would be eligible for complete tax exemption, mail the coupon below for your free copy of "Facts for Businessmen."

MAIL THIS COUPON

Economic Development Administration
Commonwealth of Puerto Rico, Dept. DR-1
579 Fifth Avenue, New York 17, N. Y.

Mail me "Facts for Businessmen," your report of the advantages of Puerto Rico for plant location.

Name

Company

Product

Address

New COLSON "HANDLER"

costs less
than 1/2 as
much as a
fork truck

yet handles
loads up to
4000
pounds



Even in busy, narrow aisles the COLSON "Handler" is easy to maneuver. It turns in its own length and rider has unimpaired visibility at all times — forwards or backwards.

Just one lever does all the work — shifts, lifts, and brakes. 6 H. P. gas engine provides plenty of power for rugged round-the-clock operation — with no time out for recharging, which is necessary with battery-powered trucks.

Don't buy a more expensive piece of equipment without first making sure that the COLSON "Handler" won't do the job as well or better — at a fraction of the cost.

Two Models



Descriptive Bulletin "The COLSON Handler" Free on Request.



ing that he is smarter than he is. But in government he will be working with people who owe him nothing, and who are not impressed at all by his importance. He must be himself, and that self must be very good because, to his surprise, he will find that there are many men of brains among the professional government men.

Selflessness

He will also find that there are other motives in life besides money, for he will meet in the public service dedicated American citizens who work long hours and make great sacrifices for no other reward than the inner satisfaction of knowing that they have served their country well. He may even get the shock of his life when he offers one of them a job in his company at twice the government salary and has his magnificent offer turned down without the blink of an eyelash.

When at last his government service is ended and he goes back to his desk he will understand all about the "they" because he has been one of them, and he will there-

after instinctively make his daily business decisions in parallel with the convictions he formed as to what is best for the country and the people.

In reflecting upon free enterprise he will sense that it is both privilege and responsibility. He will know that this unique system, which is America's gift to the world, and which is still ignored by most of the world, is one under which all the people acting collectively will tolerate his pursuing his own special interest only so long as he puts back in as much as he takes out. He will want to contribute to a deeper understanding of this great way of life, and he will be determined that it shall be perpetuated for his children and his children's children.

THE END

DUN'S REVIEW AND MODERN INDUSTRY will appreciate early notices of change of address. Usually, it is necessary to have four weeks' notice. Please include the old address.



For your new plant

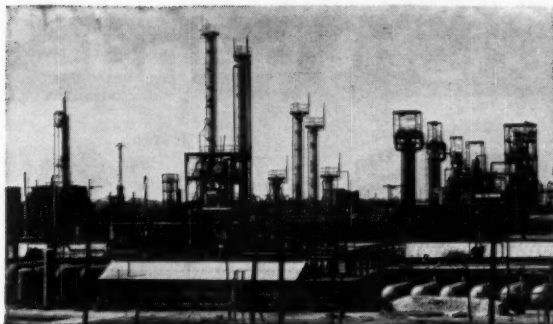
... a new roof deck that ends maintenance painting!

The new Ingersoll Aluminum and Porcelain Enamelled Roof Decks require no painting ... before or after erection! They give your plant a permanently bright ceiling that saves you dollars in reduced upkeep ... and minimized down-time, throughout the life of the building. Yet these new roof decks — engineered for fast, easy erection — are remarkably low in initial cost, too.

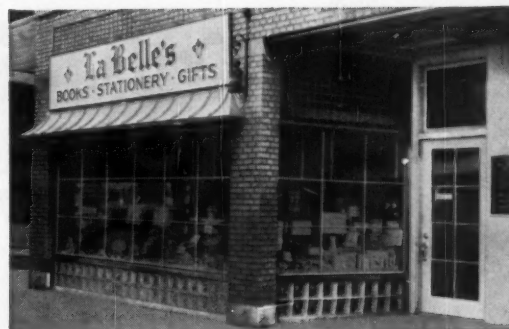


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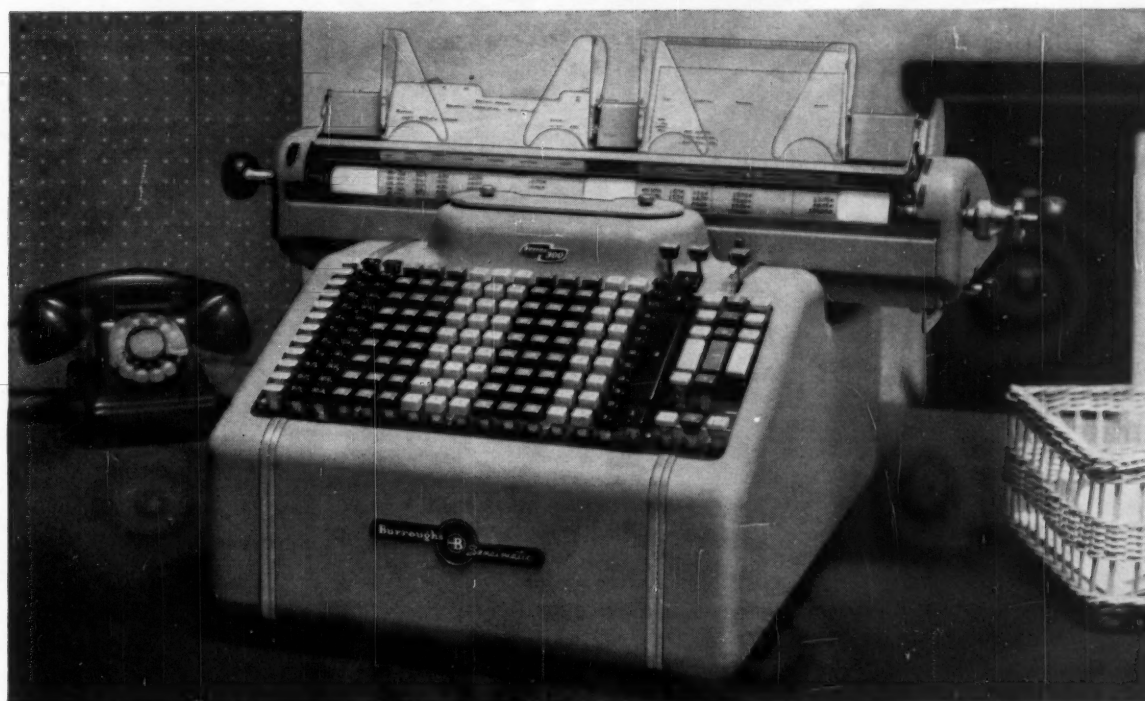
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FAIR TRADE SITUATION: NEW ATTACKS ARE GETTING HARDER TO TURN ASIDE

Committee report would repeal Miller-Tydings and McGuire laws, throw out Fair Trade completely.

THE two warring camps in the Fair Trade squabble have squared off again.

The current outburst began when a committee of 60 experts selected by Attorney General Herbert Brownell submitted its report analyzing anti-trust laws and their enforcement. The report flatly recommended that Federal exemptive legislation (which means the Miller-Tydings and the McGuire laws) be repealed. If these laws were abolished, the 41 states which currently permit Fair Trade contracts would be forced to scrap their own enabling laws and manufacturers engaging in resale price maintenance would be liable to suit under the Sherman and Clayton anti-trust acts.

The report pulled few punches. "As a result of local enabling and Federal exemptive legislation, resale price fixing, otherwise a clear anti-trust violation, is to-day lawful

in most American states." These laws violate "the most elementary principles of a dynamic free enterprise system," said the majority report of the committee.

It will be some time before the Administration decides whether this viewpoint will be incorporated into policy and submitted to Congress. Meanwhile, Fair Trade advocates are shifting into high gear.

Actually, the Fair Trade camp has been preparing for the report for a long time. As early as last September, having studied the background of the group preparing the report, Fair Traders suspected an unfavorable opinion. At that time, the Washington representative of the National Association of Retail Druggists told the *Wall Street Journal*, "Our plan is to be on guard and wait for Judge Barnes (co-chairman of the group) to spring his report from the infamous committee of 60. The committee is

packed against Fair Trade and we understand they're going to shoot for repeal of the McGuire Act."

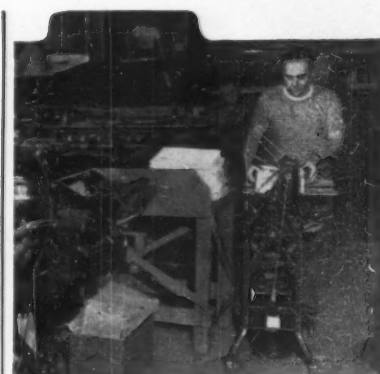
Fair Traders Fight Back

To date the Fair Traders' big guns have used the committee's minority report as ammunition. In this activity, they are getting the vocal support of some of the dissenting committee members themselves. Last month, for example, Dr. Walter Adams, an economics professor who served with the group, lashed out at what he believed to be the selective nature of the majority findings.

He pointed out that Firestone Tire and Rubber Company, which owns and operates its own retail outlets, in actual practice fixes its retail prices. The General Motors dealer system, he said, dictates retail prices. "Yet the committee said nothing about abolishing forward integration or the automobile agency retail price fixing. . . . If one form of retail price maintenance is wrong, all forms are wrong. If we keep one form we should keep all forms."

Both sides in the debate are making extensive use of the courts. During the past twelve months, cases were filed in over twelve states. In 1953, Schwegmann Brothers, a New Orleans supermarket operation, twice attempted to get the Supreme Court to review a lower court decision upholding the constitutionality of the McGuire Act.

The history of Fair Trade suggests to many observers that a court ruling against Fair Trade, even if upheld through subsequent reviews by higher tribunals, is not particu-



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larly effective. The reason is that no sooner does a court throw out a Fair Trade law on constitutional or technical grounds than the state legislature or Congress passes a law satisfying the legal objection while maintaining Fair Trade.

The 1937 Miller-Tydings Act, for instance, made resale price maintenance between manufacturer and retailer exempt from the normal anti-trust provisions of the Clayton and Sherman Acts. But the Supreme Court ruled in 1951 that the 1937 law bound only the retailers who actually signed price agreements with the manufacturer. Congress then promptly passed the McGuire Act, which made a price agreement between a manufacturer and a single retailer in a state binding on all retailers in that state. Both laws apply only when a state has permissive Fair Trade legislation of its own.

Is the FT Tide Turning?

Until now at any rate, Fair Trade proponents have the major share of successes. They have succeeded in passing Fair Trade legislation in, at the moment, 41 states. Anti-Fair Traders take some small sustenance from the fact that not too long ago 45 states operated under Fair Trade laws. Proponents of resale price maintenance have also had it pretty much their way in Congress. The vote on the McGuire Act in Congress, for example, was 196 to 10 in the House and 64 to 16 in the Senate.

Despite general acceptance by the nation's legislators, Fair Traders are not entirely happy. For one thing, they don't like the trend in state capitals which has cost them four Fair Trade states in the past few years. For another, they are unhappy about what seems to them to be Attorney General Brownell's position.

Commenting on the report, for example, the Attorney General called it "a landmark in the preservation of our system of free enterprise." Though he would make no comments about the likelihood of specific recommendations being adopted by the Administration he did tell the National Retail Dry Goods Association in a prepared address that Fair Trade takes the right from a business man to decide whether to compete by working under a low overhead with lower



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prices or by providing more services with correspondingly higher prices. Fair Trade results, he continued, in higher prices for the consumer. From these and similar comments, Fair Traders draw the logical inference that if Mr. Brownell is not actively against them, he certainly is not with them.

The Bureau of Education on Fair Trade, which claims to represent all segments of industry and commerce, says it has strategy prepared to meet the latest threat. The Bureau's public relations spokesman said last Fall that the organization will, if necessary, dip into its \$100,000 surplus to carry on the fight.

Some Washington observers and marketing experts think that in spite of its solid position in the legislatures, Fair Trade may indeed be in for a progressively harder series of contests. This feeling stems from what these analysts regard as inertia on the part of manufacturers nominally backing Fair Trade. They claim that occasional court suits brought by manufacturers are face saving devices employed while the manufacturers either ship direct to large discounters or to wholesalers, knowing that the merchandise is destined for a price-cutter.

Playing Both Sides?

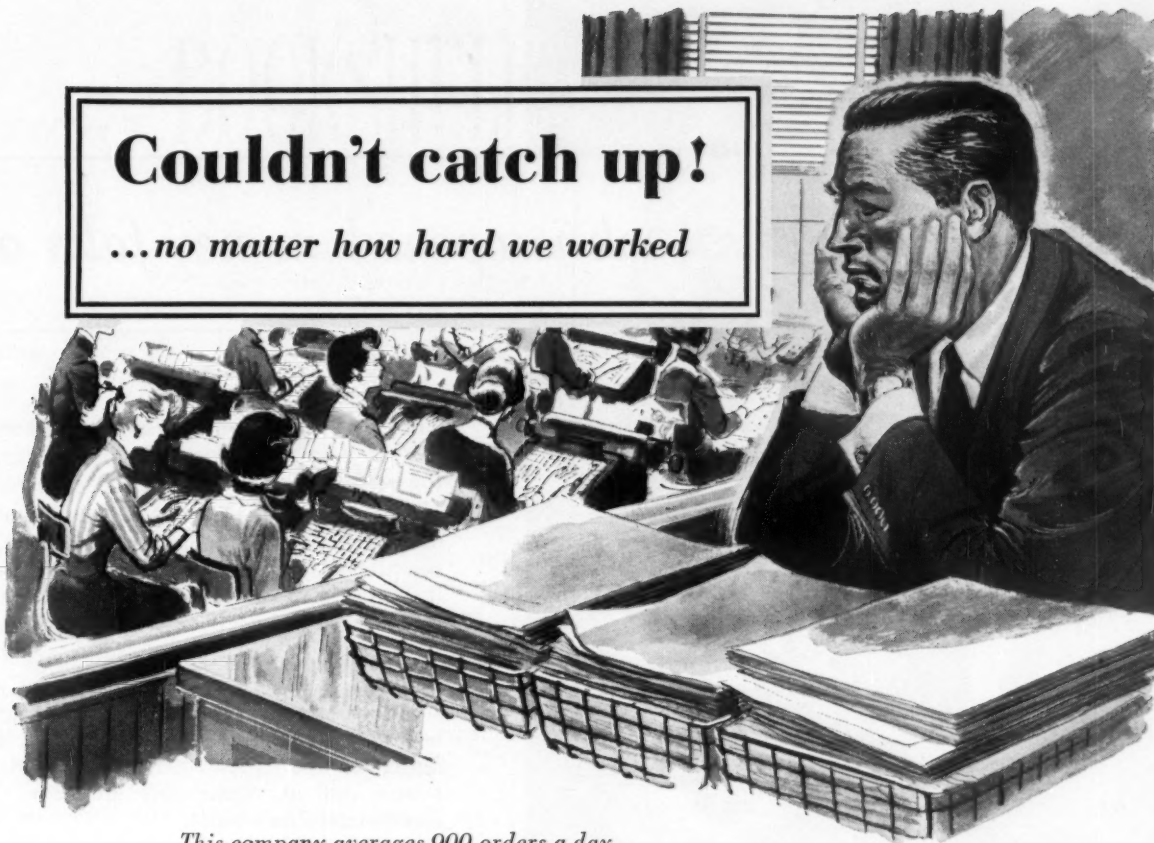
This position is borne out by direct testimony in many instances. Burdine's, Inc., for instance, a Miami department store, wrote a hundred letters to presidents of companies whose products were being price cut. Says their merchandising manager, "About half of the letters were answered immediately or long distance calls were made promising some kind of action immediately. Many others made a personal call on our management... The balance... made no attempt to remedy the situation."

What happened when Burdine's met the discount prices on products of unco-operative manufacturers? "The big eye-opener for most buyers and merchandisers was that we could buy more advantageously from jobbers and make better deals with the manufacturers... proving again that some manufacturers are not interested in maintaining their Fair Trade prices."

Thus the underlying problem for Fair Trade advocates, it would seem, is disenchantment in their own ranks.

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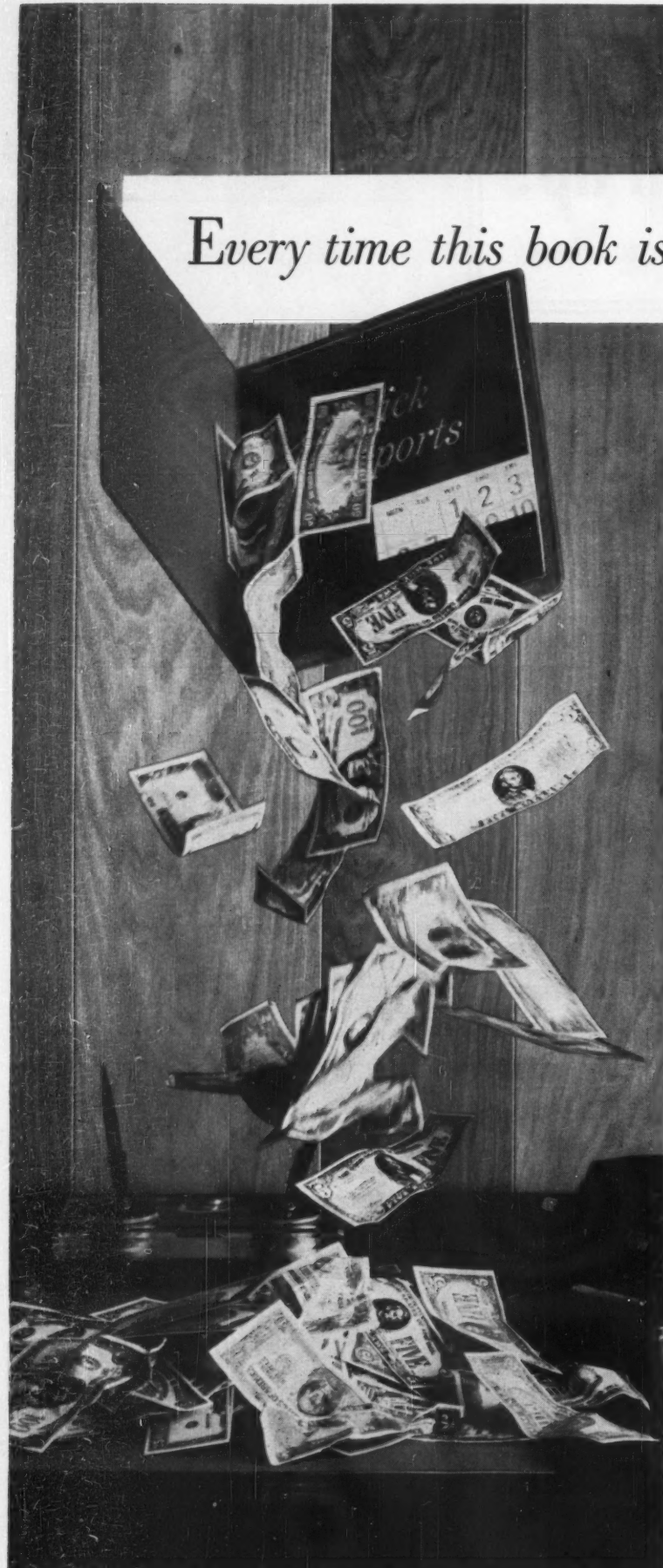
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Finding Sizzling Salesmen

A COMPANY GUIDE TO THE SELECTION OF SALESMEN by Milton M. Mandell, American Management Association, 330 West 42nd Street, New York 36, N. Y., 160 pages, \$4.75.

If the next salesman you add to your staff proves unsatisfactory, your mistaken judgment will probably cost you about \$6700. This and many other worthwhile facts were uncovered in this detailed survey of 180 companies, most of which had staffs with fewer than 50 salesmen.

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Design for Success

DESIGNING FOR PEOPLE by Henry Dreyfuss, Simon and Schuster, 630 Fifth Avenue, New York 20, N. Y., 240 pages, \$5.

Man is the measure of all things. This is the theme of the new book by a well-known industrial designer who has developed products for dozens of outstanding companies for the past twenty-five years. Dreyfuss demonstrates how many prod-

ucts were made to conform with his discoveries about his prototype of the average American and reveals many facts about public taste.

While this book won't enable you to do your own industrial designs, it will enable you to deal more expertly with your own designer. It provides a point-by-point check-list for good industrial design as well as step-by-step illustrations of the entire process. Rich with anecdotes and illustrations, this volume is a vivid example of the author's skills, for it was designed by him.

Discovering Executives

WHAT MAKES AN EXECUTIVE? Columbia University Press, Morningside Heights, New York 27, N. Y., 179 pages, \$3.50.

How can you discover if an employee has executive potential? How successful have been many of the plans for executive development in industry? What are some of the yardsticks for measuring an executive's performance?

These were among the dozens of queries which bounced like ping-pong balls around the discussion table at recent meetings which included business men, educators, a psychiatrist, and others. Among the discussants who gathered around the table at the Graduate School of Business at Columbia were the



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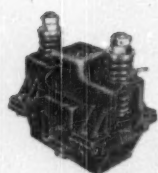
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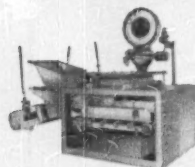
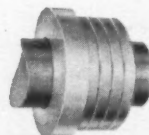


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Seeing the Future

SHORT-TERM ECONOMIC FORECASTING by the National Bureau of Economic Research, Princeton University Press, Princeton, N. J., 506 pages, \$7.50.

Although many large companies are gearing their plans to long-term developments in the economy, smaller enterprises continue to watch with the intensity of a chaperon the immediate short-term changes in business conditions. To be able to call the turns in the business cycle is to have a distinct advantage in planning for sales, purchasing, inventories, payrolls, prices, and the other ingredients of business operations.

Although this new volume doesn't pretend to offer detailed instructions for making a crystal ball, it does describe the progress that professional economists and others are achieving in searching out the shape of things to come. While it is not intended for the general reader, this collection of papers presented at the Conference on Research in Income and Wealth, conducted by the National Bureau of Economic Research, should not be too weighty for the executive seriously interested in economic research.

Land of the Free

1001 VALUABLE THINGS YOU CAN GET FREE, by Mort Weisinger, Grosset and Dunlap, 1107 Broadway, New York 10, N. Y., 64 pages, \$1.

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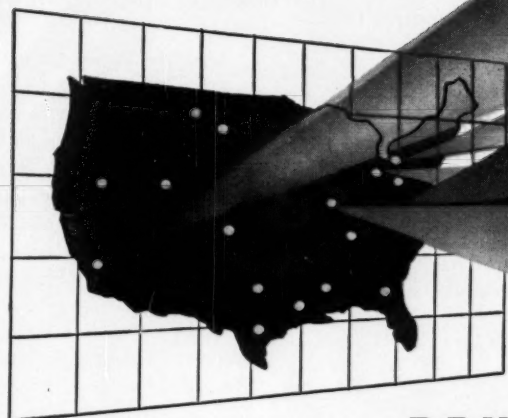
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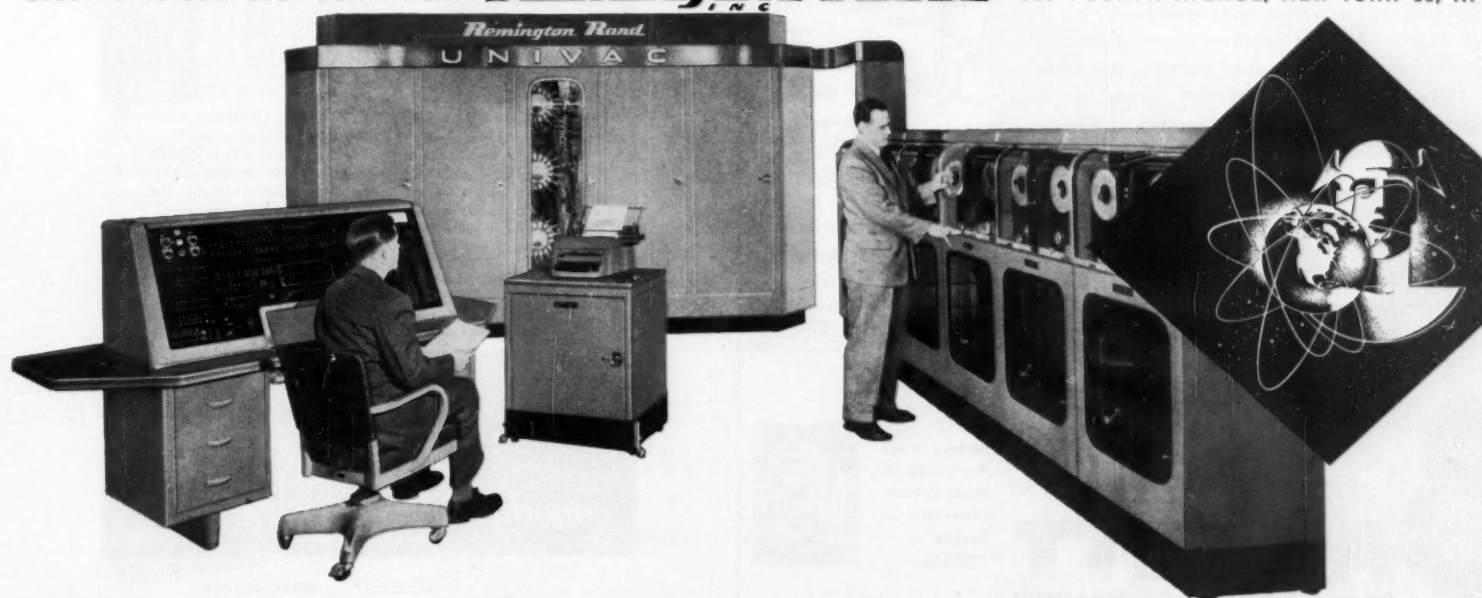
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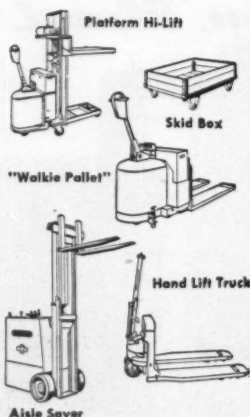
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Free Automation Dictionary

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A List of Lists

To have a list of worthwhile readings is to have both a starting point for self-enlightenment and a wide-range view of a particular field. These are provided by several recent bibliographies on business subjects which are listed below. All six bibliographies, except the one

on profit sharing, are annotated.

An Introductory Bibliography of Motivation Research, Advertising Research Foundation, Inc., 11 West 42nd Street, New York 36, N. Y., 34 pages, \$3.

A Comprehensive Bibliography of Domestic and Foreign Books and Articles on Profit Sharing by U. J. Jehring, Profit Sharing Research Foundation, 1322 Chicago Avenue, Evanston, Ill., 16 pages, free.

Business Applications of Electronic Machines: An Annotated Bibliography, Controllership Foundation, Inc., 1 East 42nd Street, New York 17, N. Y., 46 pages, \$2.

NOMA Bibliography for Office Management 1955, National Office Management Association, 132 West Cheltenham Avenue, Philadelphia 44, Pa., 15 pages, \$2.

Guide to Selected Readings in Records Management, National Records Management Council, Inc., 50 East 42nd Street, New York 17, N. Y., 28 pages, \$2.85.

Leadership and Executive Development: A Bibliography, University of Minnesota Press, 10 Nicholson Hall, Minneapolis 14, Minn., 56 pages, \$1.50.

THE FASTEST, EASIEST WAY TO ADDRESS YOUR CONTAINERS

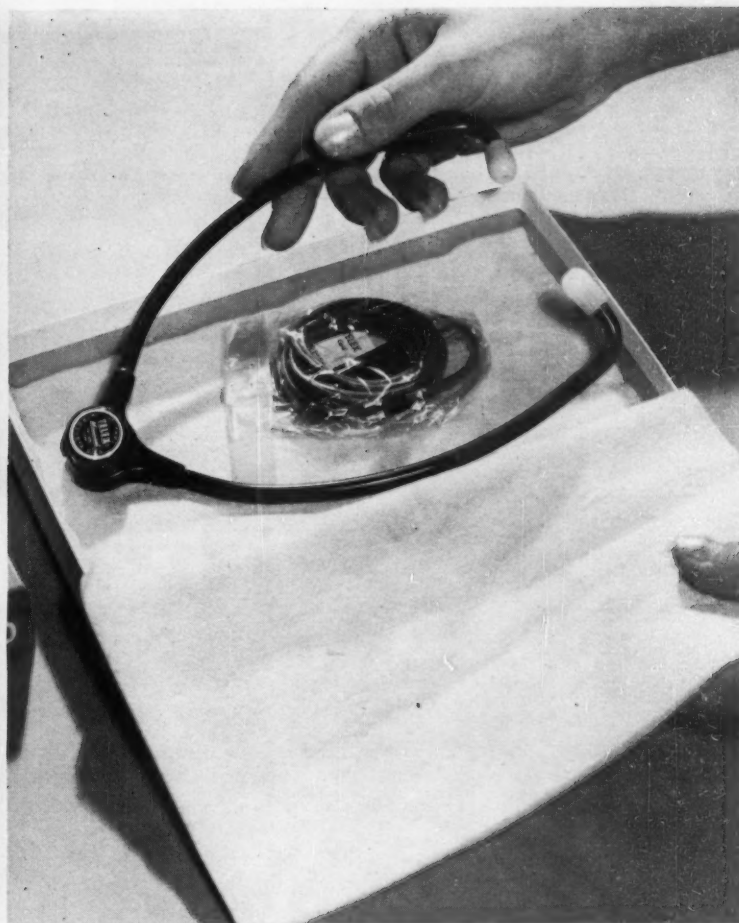
Pictured here is the WEBER DIRECT-TO-CONTAINER SYSTEM. The cartons have been pre-printed with a label frame. Consignee's address is printed inside the frames with a WEBER RJ-1 hand printer at the rate of 40 to 50 cartons per minute. Eliminates labels. Faster, neater than brush stenciling. The RJ-1 prints from stencil easily prepared on typewriter. Reservoir holds enough ink for 7,500 to 10,000 prints. Can be supplied with one or two counters for quantity check.

MODEL RJ-1 \$14.50 WITH SUPPLIES.

SEND FOR FOLDER ON THE RJ-1 HAND PRINTER AND DIRECT-TO-CONTAINER SYSTEM

Weber Label and Marking Systems,
Div.—Weber Addressing Machine Co., Dept. 3E Mt. Prospect, Ill.

another **Weber** system



Cold pipes or ham head sets? Tufflex can do the job better

For cold storage refrigerant lines, Tufflex* provides better insulation that's highly efficient and easy to apply. The soft, flexible Tufflex blanket conforms readily to irregular contours. And for protecting ham-radio communication equipment, Tufflex nonwoven fabrics carefully cushion against shock.

But the virtues of Tufflex do not stop there. Its softness and resiliency make Tufflex a natural for the cushioning of fine furniture or sleep equipment. Unique sound absorbing and deadening properties provide an answer to many sound control problems. Complete facts are yours in an interesting booklet, "The Expanding Miracle of Tufflex"...write Wood Conversion Company, Dept. 239-55, First National Bank Building, St. Paul 1, Minnesota.



CUSHIONING • PROTECTIVE
PADDING • SOUND AND
THERMAL INSULATION



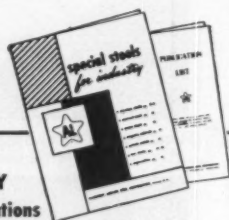
One prime advantage of Tufflex is that it can be rapidly die-cut with firm, true edges.



Tufflex lends itself to quick and easy fabrication. Here, Tufflex is being stitched to a chair back as cushioning.



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Expensive? **NO—THEY'LL LAST FOREVER!**



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Here and There in Business

WHAT'S NEW

AS OBSERVED BY THE EDITORS

For water treatment Chain Belt Company, Milwaukee 1, Wis., has a new "packaged" flotation system that comes complete with drive mechanism, liquid level controls, pressure controls, and cleaning mechanisms. Called the *Float-Treat System*, it's designed for use by oil refiners, tanners, meat packers, paper mills, soap makers, chemical plants, and a good many others, can play an important rôle in pollution control (see April, page 47) by removing suspended organic matter and other contaminants. A range of standardized components makes it

possible to fit either steel or concrete basins, and to tailor each installation to specific needs.

Water's industrial history is highlighted in Allis-Chalmers' *Water over the dam*, a 24-page story of the water wheel from the first installations in this country early in the Seventeenth Century to the dawn of the present era. Extensively illustrated, the booklet (originally a two-part article in the company's own magazine) shows how the development of water power paralleled, and was spurred by, the



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MODERN INDUSTRY

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BLUE RIBBON for speed in *complete closure*. The quality tape with incredible speed of adhesion. Just one fast sweep of the hands and you get a tighter, more permanent seal against dust, smoke, moisture, vermin. The secret — Hudson's exclusive adhesive, *Supple-ized* to give you instant full depth moistening . . . quicker, better sealing.

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 and Stack 'em High As You Like

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Modern handling methods call for quick and easy storage — in a minimum of space. The special Wirebound construction of strong steel wire and light, tough wood suits itself to modern methods of materials handling. You stack 'em fast, efficiently and high as you like. Shown above are some high-stacked Wirebound pallet boxes that are used for inter-plant shipments and parts storage. No other container is so perfectly suited to fork truck handling. They appeal to economy-minded management. We will be pleased to give you all details on versatile Wirebounds, regular or pallet boxes and crates. Write today.

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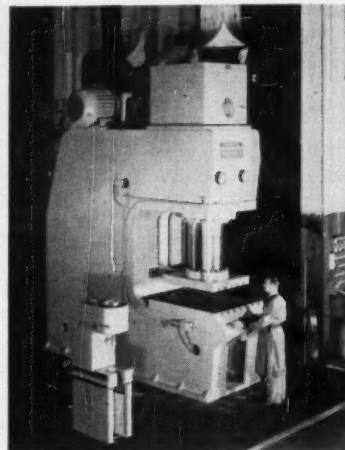
Name _____
 Firm Name _____
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development of American industry. Copies of *Water over the dam* may be obtained without charge from Allis-Chalmers Mfg. Co., 917 S. 70 Street, Milwaukee 1, Wis.

Size range of presses now offered for trimming, marking, compacting, blanking, drawing, and a variety of other metal-forming jobs is demonstrated by this Hydraulic Press Manufacturing Company picture. Standard H-P-M C-frame presses now range in size from 2 to

200 tons. Special models, like the big one in this picture, range as high as 500 tons.

Big plant cleaner, a mobile scavenging unit said to be the largest yet marketed for emptying machine sumps and drainage pits, can also be used to clean chemical and food processing tanks, and big Diesel engines. It has a capacity of 200 gallons, and features a vacuum pickup that converts, by shifting a lever, to a pressure-discharge pump. Laidlaw Company, 1606 North Illinois St., Indianapolis 2, Ind., the manufacturer, says the *Sludge-King* will turn on a radius of 82 inches, is easily maneuvered in narrow aisles.



New insulation for plant equipment is a spray-on foam that leaves the spray gun as a resinous liquid; expands to as much as twenty times its original thickness after it's applied. Insul-Mastic Corporation of America, Summit, Ill., the manufacturer, says the finished coating is hard and durable, and can provide both thermal and acoustical insulation. I-M notes, too, that this new *Poly-Cell* insulation can be used for

Attention: Executive in charge of getting the **JOB DONE!**

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sales or credit problems

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reports can provide the facts
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Key Account service was developed as an aid to business men who require select, detailed information on a particular account. The analysis is written to the point of view of your particular problem and contains answers to any special points of emphasis which need to be covered.

But who needs Key Account service. The answer to this is —any business concern with extraordinary sales or credit problems. Test yourself on the questions below —do any of your accounts fit into these categories?

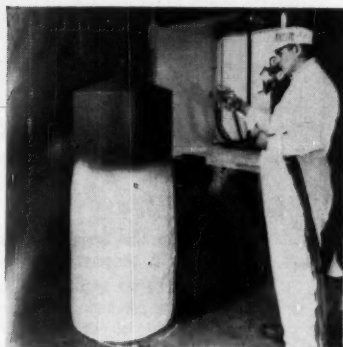
Check either "Yes" or "No" after each question.

- | | Yes | No |
|---|-------|-------|
| 1. Do you need current detailed information as an aid in evaluating new distributors or new sales outlet? | _____ | _____ |
| 2. Are any customers taking a large portion of your total production? | _____ | _____ |
| 3. Do any accounts request seasonal dating on large orders? | _____ | _____ |
| 4. Are any customers dependent on special financing in order to meet your terms of sale? | _____ | _____ |
| 5. Has any customer requested an unusual increase in his credit line? | _____ | _____ |
| 6. Is any phase of your production or distribution dependent upon a source of supply delivering special items on schedule? | _____ | _____ |
| 7. Do you have any important contracts for future sales that must be reviewed periodically in view of outstanding purchase commitments? | _____ | _____ |
| 8. Do you have any credit problems that are unusual from the viewpoint of both buyer and seller? | _____ | _____ |

If you have checked "yes" to any of these financial or merchandise credit problems, a key account report can be of value to you in coming to decisions which will build profitable relationships.
Call the nearest Dun & Bradstreet office and ask for the Key Accountants analyst.

DUN & BRADSTREET, INC.

Offices in principal cities of the free world



irregular surfaces, and provides a joint-free covering. The material itself is an isocyanate foam (see November 1953, page 54) that is moisture-resistant and will not support combustion. It does, however, require special spraying equipment; and I-M is setting up a licensee organization to do the work on a contract basis.

New chain for use with overhead conveyors features pins impregnated with dry lubricant to eliminate need for surface lubrication, cut maintenance costs, avoid lubricant drippage. U. S. Engineering Company, Detroit 27, Mich.,

the manufacturer, says the chain will operate over a temperature range from minus 30° to plus 800° fahrenheit, is unusually strong, and is designed to be interchangeable with other standard chains.

Work measuring instruments, designed to record productive machine time and simplify determination of wage incentives and bonus pay, are leased and serviced by Stewart Instrument Company, 6507 Grand River, Detroit 8, Mich. Three models are made: One for installation on standard motor-driven production machines; one



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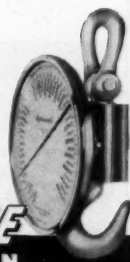
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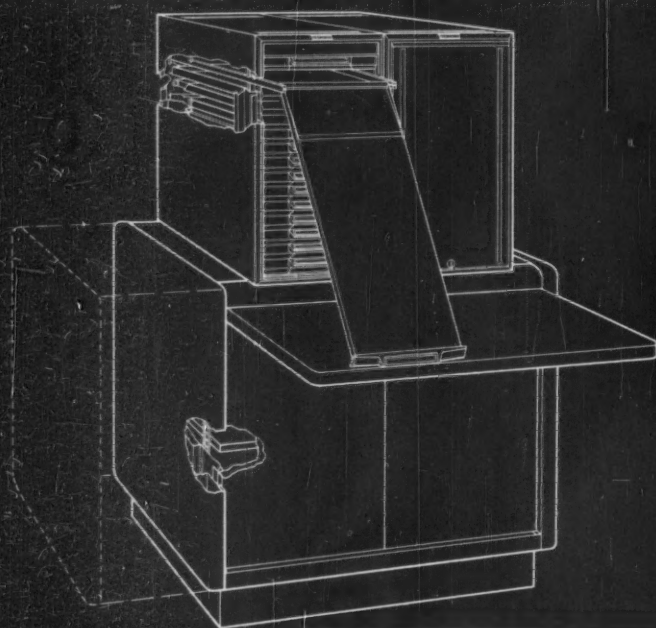
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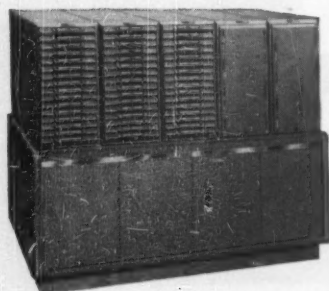
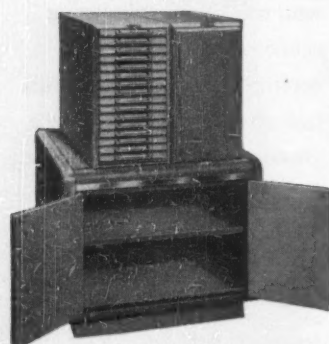
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GREATER STRENGTH—maximum rigidity achieved by formation of shell and reinforcing members.

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For more information write for illustrated brochure No. 1040.

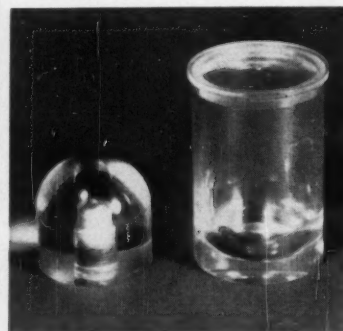
ACME VISIBLE

Acme Visible Records, Inc.
CROZET, VIRGINIA
Representatives in all principal cities

ONLY THE RECORDS THAT ARE USED PROFIT A BUSINESS

for high-cycle tools; and one for arc welders. According to Stewart, the *Workometer* can also be used to study cutting tool efficiency and other phases of machine operation.

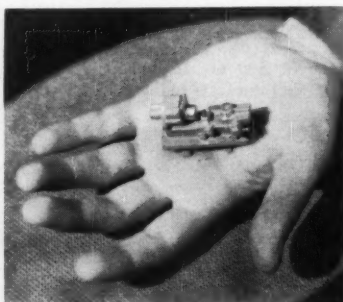
Plexiglas pycnometer, a cup and nesting tare weight machined from transparent, corrosion-resistant acrylic plastic, is designed for use in determining the weight per gal-



lon and specific gravity for viscous and corrosive liquids. It has a wide mouth for easy filling and an engraved fill line. Gardner Laboratory, Bethesda, Md., makes it. Rohm & Haas supplies the Plexiglas acrylic plastic.

For automatic control of machines, an "electronic supervisor" has been designed by International Business Machines. The company says it allows transmission of preset start-stop programs over existing electrical control circuits. Consisting of a central operations panel, transmitter, and coded relays, the system can handle 40 "on" and 40 "off" signals, will also synchronize recording and time indicating equipment with a master clock.

For plant layout planning, Visual Production Planning, Inc., Connellsville, Pa., now offers a new group of three-dimensional scale models of standard machines like the lathe pictured here. Made of plastic, the machines are priced



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RESULTS IN BRIEF	1954	1953 (1)
Net Sales	\$ 648,641,241	\$ 577,347,511
Profit Before Taxes	43,895,472	28,018,866
Net Earnings	20,795,472	13,193,866 (2)
Earnings Per Common Share(3) ..	\$4.72	\$3.27
Cash Dividends	7,438,453	6,738,945
Working Capital	67,317,700	62,459,971
Net Worth	88,729,634	74,471,555
Backlog	1,007,800,000	902,500,000

(1) ON A PRO FORMA BASIS, INCLUDING CONSOLIDATED VULTEE AIRCRAFT CORPORATION. (2) EXCLUDING EXTRAORDINARY INCOME. (3) ADJUSTED TO GIVE EFFECT TO 2-FOR-1 STOCK SPLIT-UP ON MARCH 10, 1955.

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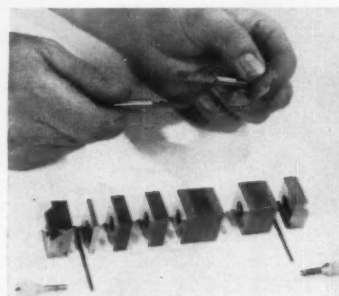
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from \$1.25 each; auxiliary equipment miniatures (lockers, ladders, desks, files) from 10 to 75 cents each.

Cellular steel sub-flooring is now being made by American Steel Band Company, Pittsburgh 30, Pa. Developed with the cooperation of General Electric, the ASB flooring, furnished in sections, has lengthwise channels, hexagonal in cross-section, designed to carry wiring of all types, and permit electrical outlets to be placed at any desired location.

Square gage blocks, that can be assembled into vertical, indicating, and other type gages, have been added to the equipment line of The DoAll Company, 254 N. Laurel Avenue, Des Plaines, Ill. Accessories (tie rods, sleeves, thumb screws,



flat caliper bars, caliper rods, Vee blocks, base block, scribe, and center point) are reported usable with any standard square blocks, and with special drilled and tapped blocks.

Planning to travel? You'll find plenty of events of interest to industry on the West Coast this Summer. In Los Angeles, at the Pan Pacific Auditorium, the Western Plant Maintenance Show and Conference will be held July 12, 13, and 14 (show managers are Clapp & Poliak, Inc., 341 Madison Avenue, New York 17, N. Y.). In San Francisco, there will be a national conference on Electronics and Automatic Production, sponsored by the National Industrial Conference Board. It's scheduled for August 22 and 23, and will be followed by the Western Electronic Show and Conference. And Portland, Oregon, will be the scene of the Society of Automotive Engineers Golden Anniversary Meeting. It is planned for August 15, 16, and 17.



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PANAMA "COPY-HOLDER" BOX

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Likewise, many communities see the immediate problem of overcrowded schools. However, it is equally important that they have the vision to plan for tomorrow's needs, too.

Your community must have a long-range plan for its schools—one that looks at least ten years ahead! Because enrollments in all grades will continue to increase during this period, temporary "patchwork" solutions simply postpone and prolong the problem.

For free booklet, "How Can Citizens Help Their Schools," write Better Schools, 2 West 45th Street, New York 36, N. Y.

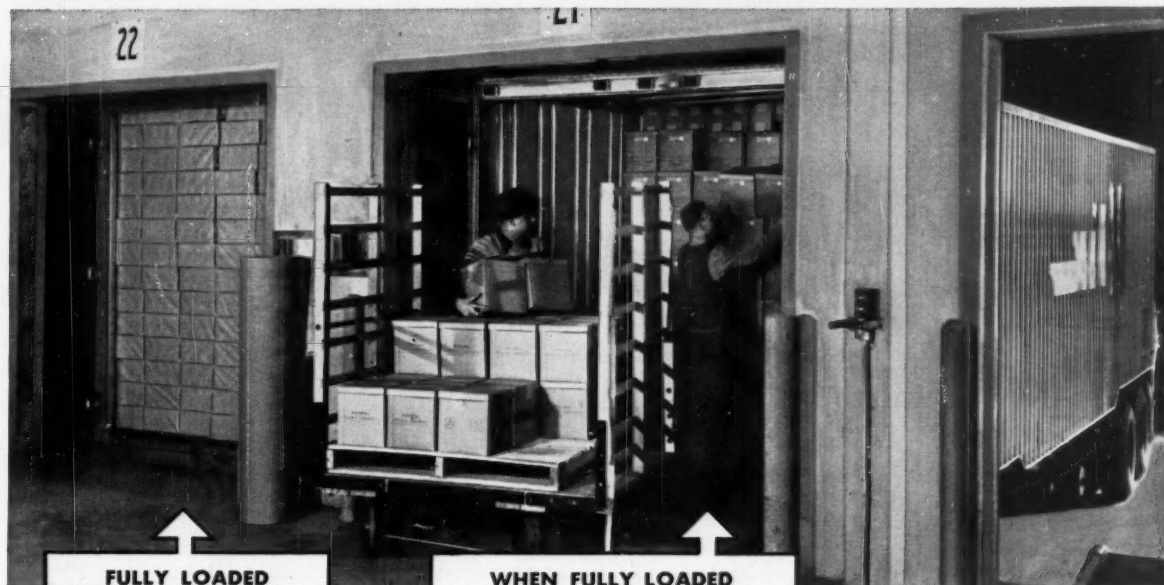


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Hauling Crackers and Cookies For Nabisco
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5000 EXTRA POUNDS PER TRIP!



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CARRIES 22,836 LBS.

WHEN FULLY LOADED
FRUEHAUF Volume★Van
WILL CARRY 27,911 LBS.

Side by side at the loading dock of Nabisco's Chicago bakery, a new Fruehauf Volume★Van and a conventional-type Trailer are being loaded with crackers and cookies. The Volume★Van carries over 5,000 pounds—or 22%—more than the older Trailer.

Shipping Men In *Many* Industries Are Reducing Costs By Loading Thousands of Pounds of Extra Freight Per Trip Into The New, Bigger-Capacity Fruehauf Volume★Van!

ON A NABISCO HAUL of crackers and cookies, Indianapolis Forwarding Company is carrying an *extra 5000 pounds per trip* since the introduction of new Fruehauf Volume★Vans on the run. This is but one tangible example of the shipping efficiency gained with higher-capacity Volume★Vans. In some cases added payloads of 35% or more have been recorded.

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FRUEHAUF TRAILER COMPANY

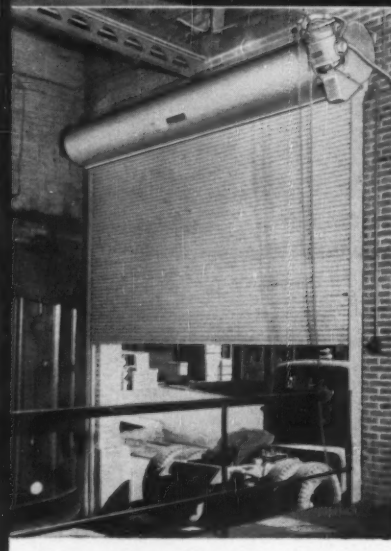
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Opening straight upward, Kinnear Rolling Doors coil out of the way above the opening, into the compact hood mounted on the wall (or often within the wall, where desired).

They give you full use of all space around doorways at all times. *No extra space of any kind is needed for their opening action and closing action.*

The rugged interlocking steel-slat curtain (*originated by Kinnear*) also gives you added protection

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Kinnear Rolling Doors are built any size, for easy installation in either old or new buildings of any construction. Manual-lift, chain, or crank operation—or motorized push-button control. **Write for full details.**

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Saving Ways in Doorways

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5-55



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A Bostitch Economy Man saw a way to improve this method—using metal-piercing, rust-proofed staples and longer, stronger hinges. Now, Bostitch Metal Stitching saves manufacturer *two-thirds* in fastening costs, offsets extra cost of better hinge. The improved doors work better, last longer.

How much can you save by swinging over to Bostitch stapling?

Your Bostitch Economy Man can tell you—objectively and honestly. He's one of 350 trained fastening specialists working out of 123 cities in the U. S. and Canada. There are over 800 kinds of Bostitch staplers in his cost-cutting repertoire. Look up "Bostitch" in your telephone directory or check the coupon at the right.

BOSTITCH, Inc., 665 Mechanic St., Westerly, R. I.

I'd like to know exactly how stapling can cut costs in our fastening operations. I'm particularly interested in the following applications (please check):

HI-SPEED PRODUCTION FASTENING

- ☐ stapling vs. riveting
- ☐ stapling vs. spot welding
- ☐ stapling vs. screws or bolts
- ☐ stapling vs. glue or cement
- ☐ stapling vs. tape
- ☐ stapling vs. tacks or nails
- ☐ stapling vs. solder
- ☐ stapling vs. wire or string

PACKAGING and CARDING

- ☐ sealing bags (cloth, paper or plastic)
- ☐ mounting products on display cards
- ☐ fastening items to individual cards

SHIPPING ROOM ECONOMIES

- ☐ preparing cartons for filling
- ☐ sealing filled cartons
- ☐ lining or padding crates
- ☐ applying shipping bills or tags

BUILDING APPLICATIONS

- ☐ applying asphalt roofing
- ☐ laying underfelt
- ☐ installing ceiling tile
- ☐ applying insulation
- ☐ installing low-voltage wiring
- ☐ applying shake shingle siding

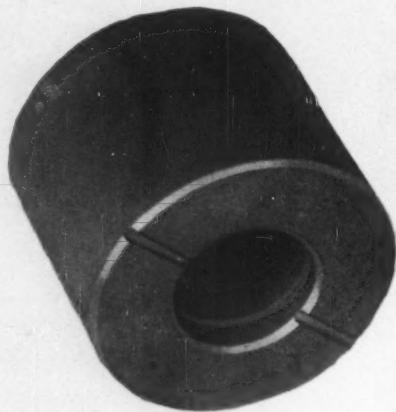
OFFICE EFFICIENCIES

- ☐ filing
- ☐ routing
- ☐ posting
- ☐ binding folders and reports
- ☐ preparing advertising dummies

Fasten it better and faster with

BOSTITCH®
STAPLERS AND STAPLES

Name _____ Position _____
Company _____
Address _____
City _____ Zone _____ State _____



Why you get more work per dollar with Morganite

Morganite bearings are not stopped by the dust-filled air of the cement plant, the fumes in a chemical plant, quick changing temperatures in steel mills or in and out of bakery ovens. They are just as "at home" deep in the dye vat of textile mills as under ideal conditions. You can install them in hard-to-get-at places and forget them. Morganite bearings are self-lubricating. They require no maintenance. They will not contaminate food products, dyes or chemicals. Extreme temperatures have little or no effect. They are corrosion-resistant. They are self-polishing, usually needing no expensive finishes. **AND THEY CAN BE MOLDED AND MACHINED TO CLOSE TOLERANCES.** It will pay you to get the facts about Morganite. Write—



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INCORPORATED

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2. Unusual city, county and state tax advantages.
3. Industrial sites plentiful.
4. Good banking facilities.
5. Full cooperation guaranteed.
6. Strategic location.

FOR SMALL OR MEDIUM INDUSTRIES

Industrial Development Committee of 100

Lakeland Terrace Hotel

LAKELAND, FLORIDA



The Country Lawyer

He could have gone to the city, but his roots are deep in his community. He chuckles a bit over the comparison of the "little fish in the big pond" and the "big fish in the little pond," but he likes his small town "listening post" where he is more of an arbiter than a lawyer because he frequently finds a way of patching up quarrels, both family and commercial, without cluttering up the court calendar. He serves on the school board, heads the charity drives and is the man of action whenever the community needs leadership. He makes a living, and a good one considering the resources of the community, but no fellow citizen with a problem stays away because he's afraid of the legal fee. Lawyer he is, and philosopher too, who loves the community he serves beyond the measure of money or personal honors. His principal compensation comes from the love and praise of his fellowmen.

In its 113 years of service to business, Dun & Bradstreet has observed the unselfish attitude of the country lawyer in his community. He is a source of information who often helps worthy merchants get goods on credit terms and occasionally uses his persuasive skill to help his clients collect delinquent accounts. His work, legal, social and cultural, brings honor to his name and to his profession.

This advertisement is one of a series devoted to the business and professional men who render distinguished service in their communities.

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Watchdog... stops waste!

Postage, even in a small firm, is a sizeable item. The overpaying of postage on only a dozen letters a day, through a clerk's normal eye error or a scale's hidden inaccuracy, will amount to nearly \$100 a work year! A Pitney-Bowes precision scale is the watchdog that will prevent such waste. It stops the loss of postage through overpayment... and the loss of customer good will through underpayment with resulting "postage dues." Its pendulum mechanism, hairline indicator, and wide-spaced ounce markings eliminate errors in reading! Four models; one includes parcels up to 70 lbs.

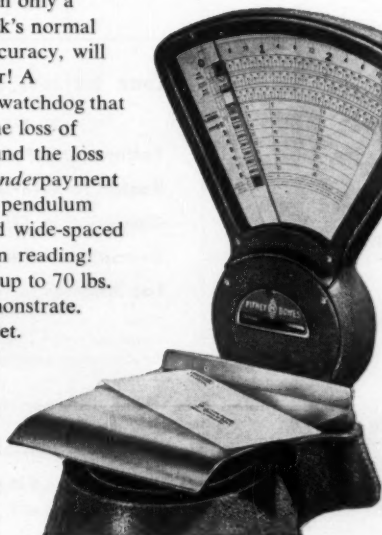
Ask the nearest PB office to demonstrate.
Or, write for free illustrated booklet.

FREE: Handy wall chart of Postal Rates
with parcel post map and zone finder.



PITNEY-BOWES
Mailing Scales

PITNEY-BOWES, INC.
1577 Walnut St., Stamford, Conn.
Originators of the postage meter
... offices in 94 cities.



ARE

HAND PALLET TRUCKS

OBSOLETE?

"Hand pallet trucks are out-of-date", an acquaintance of ours recently confided. "They're being replaced by powered fork trucks."

We assured him, quite quickly, that this was not so. And explained the reason why. Powered fork trucks, we pointed out, were in use for some time before hand pallet trucks were introduced. It was the need for a unit to supplement the power truck that produced the hand pallet truck.

Consider your own plant or warehouse—and the places where heavy power trucks can't go. On small, limited-capacity elevators, for example—on upper floors of old, multi-storied buildings—inside small motor trucks—in congested warehouse aisles—around crowded production areas. And remember: while power trucks handle your heavy loads and long hauls, hand trucks can transport your small loads short distances. For the amount of money you invest in a large fork truck, you can purchase 8 or 10 hand pallet trucks, spotting them where needed.

Hand pallet trucks certainly are not obsolete. They're more in demand than ever, doing the job for which they were designed: supplementing heavy, costly power trucks and freeing them for the big jobs.

We at RAYMOND are well acquainted with the hand pallet truck story. The first successful hand pallet truck was designed and developed by us. We take pride in knowing our hand pallet trucks are among the most popular pieces of handling equipment in use today.

Want to know more about hand pallet trucks? Simply request a copy of our latest catalog on your letterhead. Better yet, tell us the size and weight of your pallet loads and we'll tell you just how little a RAYMOND Hand Pallet Truck will cost.

The RAYMOND CORPORATION

4659 Madison Street, Greene, N. Y.



Which salesman

made an appointment in advance by Long Distance?

The one who's finding the customer's door is open, of course.

He pinned down his appointment by calling ahead—*Long Distance*. As a result he saved a long lobby wait. And he'll move promptly from this customer to the next.

Make it a habit, *always*, to telephone in advance for appointments. You save time. And many times an appointment call brings an *order*—saves a trip.

You can prove that this idea pays in your business. Why not try it and keep a record of the time and money you save?

BELL TELEPHONE SYSTEM



LONG DISTANCE RATES ARE LOW

Here are some examples:

Baltimore to Philadelphia	55¢
Boston to Syracuse	90¢
Cincinnati to St. Louis . . .	\$1.00
Detroit to Dallas	\$1.70
Los Angeles to New York	\$2.50

These are the daytime Station-to-Station rates for the first three minutes. They do not include the 10% federal excise tax.

Call by Number. It's Twice as Fast.

HOW TO PICK PLASTICS

HERE'S AN INSIDE STORY




It's the case of rubber-modified styrene

... That's the helpful BAKELITE Plastic used to mold the inside panel of this refrigerator door. It's an improved *tough* styrene—with just the characteristics needed for this and many other products.

BAKELITE Brand Rubber-Modified Styrene has superior impact resistance ... takes repeated shocks (door closings) without cracking. Yet it's rigid and light in weight. Colors are integral and virtually unlimited for product appeal. And, besides high resistance to food acids and other chemicals, it has an excellent gloss that makes cleaning easy.

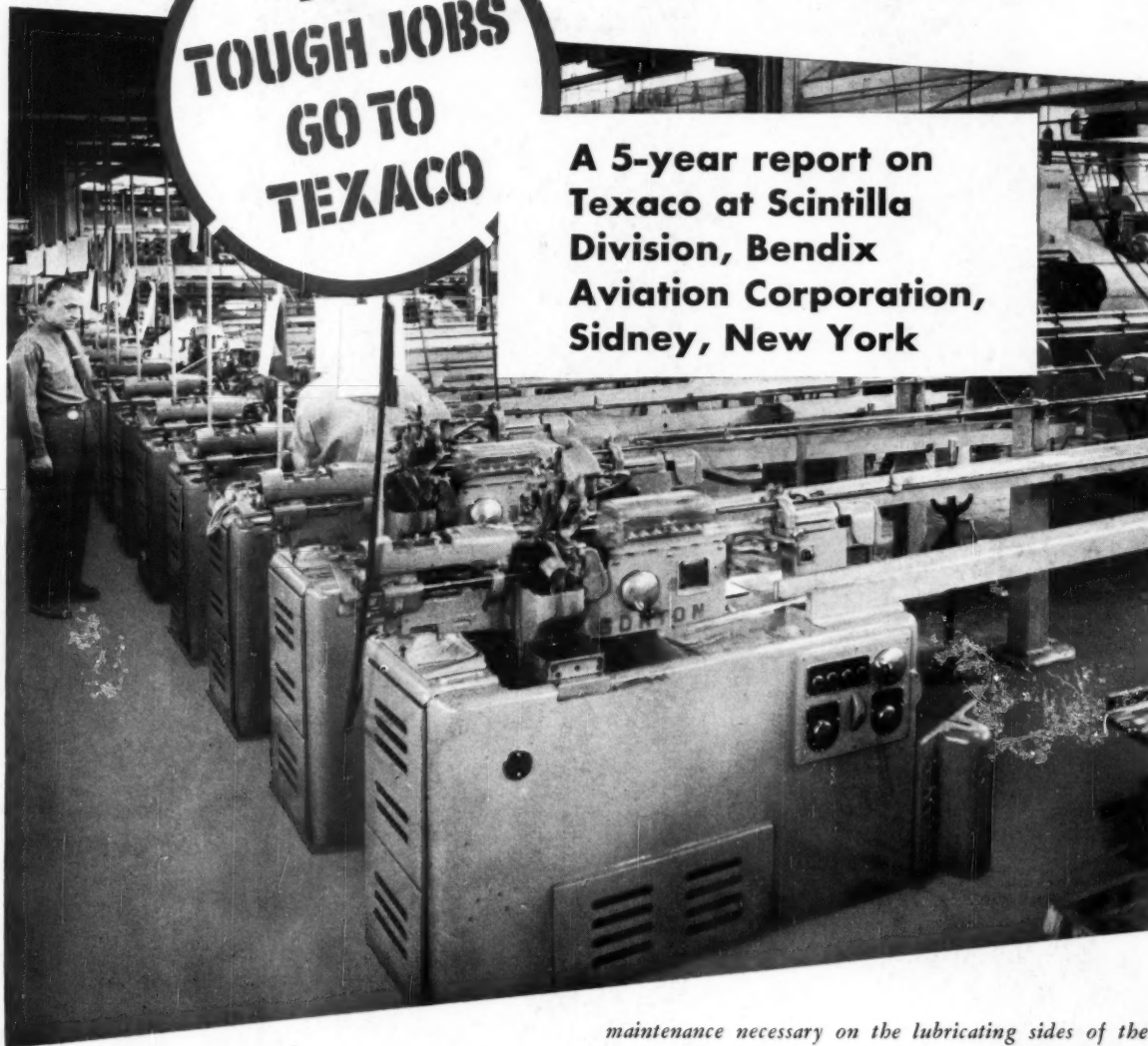
Your problem may call for this plastic ... or for one of many types of vinyls, fluorothenes, phenolics, polyethylenes, styrenes, epoxies, or others. The best way to choose is to come to Bakelite Company where you find the greatest variety and largest resources for plastics keyed to your needs. The booklet, "Condensed Reference File of BAKELITE Plastics and Resins," will acquaint you with the entire family. For a free copy, write Dept. GW-42.



BAKELITE COMPANY, A Division of Union Carbide and Carbon Corporation  30 East 42nd Street, N. Y. 17, N. Y.
The term BAKELITE and the Trefoil Symbol are registered trade-marks of UCC

**THE
TOUGH JOBS
GO TO
TEXACO**

**A 5-year report on
Texaco at Scintilla
Division, Bendix
Aviation Corporation,
Sidney, New York**



IN 1950, a few months after *Texaco Cleartex Oil* went into use on this battery of automatics, the following benefits were noted: (1) drills lasted twice as long; (2) uniform hole size was maintained; (3) staining of copper was eliminated; and (4) lubrication expense was reduced.

TODAY: "These benefits are still continuing. *Texaco* . . . has solved many of our cutting problems . . . no

maintenance necessary on the lubricating sides of the machines."

So with the tough jobs everywhere in industry. When *Texaco Lubricants and Lubrication Engineering Service* step in, production steps up and unit costs step down. Put this proven combination to work in *your* business.

Just call the nearest of the more than 2,000 *Texaco* Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, New York.



TEXACO Lubricants, Fuels and
Lubrication Engineering Service

TUNE IN . . . TEXACO STAR THEATER starring DONALD O'CONNOR or JIMMY DURANTE on television . . . Saturday nights, NBC.